approach

NAVAER 00-75-510

January 1960

S.O.P.

Ode to OpNavInst 3720.2A

Shamus O'Lucky of Frankfort Kentucky
Preflighted his A4D-1
He kicked at the tire and lighted the fire
And set off in pursuit of the sun.

He flew 'way up high where the birds never fly
His clearance no alternate listed
"Five thousand and five," said Shamus, "and I've
Got none listed 'cause no one insisted."

Whoops, Shamus O'Lucky of Frankfort Kentucky
We very distinctly remember
Our boss, CNO, said, " . . . that rule must go . . ."
And he said it 'way back in September!

"Yoicks!" cried Shamus, "not so, for my latest info
Is that your info is of the worst—
The words of September were killed in December
And we're back to the rule we had first."

Sure enough, we referred to the ungarbled word
And, like Shamus, discovered the news—
With 5,000 and 5 there's no need to strive
An alternate airport to choose.

The minimums too, for alternates you
Select have been changed to agree
With the rules of OpNav, so please go and have
A look, for it's sound S.O.P.!

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approach for '60

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Firefighter Info

Sir:

Reference November '59 issue of APPROACH. On page 2 "Fire Fighting 'Copters," BuAer Instruction 11320.16, 14 Aug 1959, should be added to your "additional info."

Reference page 3 "Marking Bomb-Bay Cooling Entry Points" BuAer Instruction 1130.4A 8 May 1959; also suggest interested parties visit the training session at a NAS Fire Dep't.

CARL DREESEN
Aer-SE 743

Air Refueling Terminology

Sir:

The important note on IFR vs IFR confusion (Nov '59 APPROACH) was a welcome sight to one who has preached its possible effects for nigh onto five years with operating activities.

If my memory serves me correctly the USAF had an unfortunate incident occur due to this confusion, therefore USAF made the official standard designation for refueling in flight, "AR" or Aerial Refueling in lieu of IFR or In-Flight Refueling.

In many instances it has been noted that "IFR" was an incorrect carryover of the various contractors initials who manufacture Air Refueling equipment. At present there are two prime examples:

(a) A Buddy Air Refueling Store which is referred to as In-Flight Fueling or "IFF." This could be somewhat confusing for maintenance personnel in regard to the IFF electronic equipment.

(b) Flight Refueling Inc. tanker equipment and flight operations which are commonly referred to both verbally and literally as "IFR."

FRED W. BURTON
Field Service Rep.
Flight Refueling, Inc.

Letters

Narrow Gage Lighting

Sir:

Recently I was on a flight which had been scheduled to land at Naval Air Station Brunswick on an IFR clearance, but was forced to land at Dow Air Force Base instead. Dow was barely above GCA minimums. When we broke through the overcast on GCA it at first appeared that we had come in to the side of the runway and parallel to it.

The pilot started to add power for a voluntary wave-off when he realized that what appeared to be the lights on the border of the runway were actually two rows of lights flush mounted on the runway itself. The approach was continued and an uneventful landing was made. After landing the approach plate was checked, but no mention was made of the flush mounted lights in the runway. At no time had GCA mentioned the antique runway lighting system.

This little surprise might prove to be the prime factor in a serious aircraft accident.

BILLY PAT MOORE, LT, MC
Flight Surgeon

● **USAF has been asked to assure that transient pilots are notified. Narrow gage lighting promises to be a real boon to IFR operations, day and night. Flight tests, in which the Navy participated show that this lighting, when standard, will permit successful visual landings under reported zero/zero conditions!**

Habit Patterns

Sir:

. . . Two repeating items contained in almost every issue stand out strongly, i.e., dropping an aircraft due to inadvertently tripping the gear handle, and turning some switch or handle in the wrong direction with dire results whereas the opposite direction was correct. One frequently reported reason for this wrong direction has been habit gained by previous model flying where the action taken would have been correct.

Two questions therefore have naturally arisen:

Why not a positive lock, actuated by upward force on the landing gear, to prevent gear movement regardless of gear handle position?

Why not, irrespective of aircraft model, require the switch for the whosis to function the same way when in the same position or moved in the same direction?

Most likely simple reasons exist for not doing so, but to this black shoe such design action would seem to be a big dividend payer.

F. H. RADLOFF, LCDR

Unrest

Sir:

I just read your article on p. 34 of the September issue of APPROACH entitled "Handling Crew Fatigue." In this article you report that a man was killed by running into a rotating prop while working on the flight deck after having had only 4.5 hrs. sleep in the last 38 hrs.

I feel that this was more than just the unfortunate accident that you call it. Sure it's important to train men to work under conditions of extreme fatigue, but this training can be done under conditions that are not hazardous.

The man we killed here, however, had probably been performing some menial task during much of this 38 hours. I know that when I was an enlisted man they made me work all day after being on watch the night before.

W. B. NEUBERG, LTJG
VF 702, NAS Dallas

VOLUME 5 APPROACH—THE NAVAL AVIATION SAFETY REVIEW NUMBER 7

Purposes and Policies: APPROACH is published monthly and contains the most accurate information currently available on the subject of aviation accident prevention. Contents should not be construed as regulations, orders, or directives. Material extracted from Aircraft Accident Reports (OpNavs 3750–1 and 3750–10), Medical Officer's Reports (OpNav 3750–8) and Anymouse (anonymous) Reports may not be construed as incriminating under Art. 31, UCMJ. Photos: Official Navy or as credited.

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Norfolk Recreation Bureau

Approach to the Professional

The complexity and unforgiving nature of today's aircraft dictate that now, more than ever, there is a vital need on the part of all naval aviators for the attitudes representative of true professionalism.

Let's start with the question—Who is a professional?

Now we know what it means in football—that is, one has or has not turned professional, and we recognize certain occupations as professions—such as medicine and law. But this doesn't help us much when we say "professional aviator" or "professional approach to aviation."

Yet there are general characteristics of all true professions:

- A profession is always more than just a means of earning a good living.
- Its members, though they may be very successful in a business way, are expected to be more absorbed in service to others than in personal gain.
- It has a code of ethical conduct which its members enforce on themselves and each other.
- Its members gain admittance to the profession only after extensive preparation and they continue to study, improve their skills, and give their best as long as they belong to the profession.
- They are expected to be leaders and to find and accept responsibility.

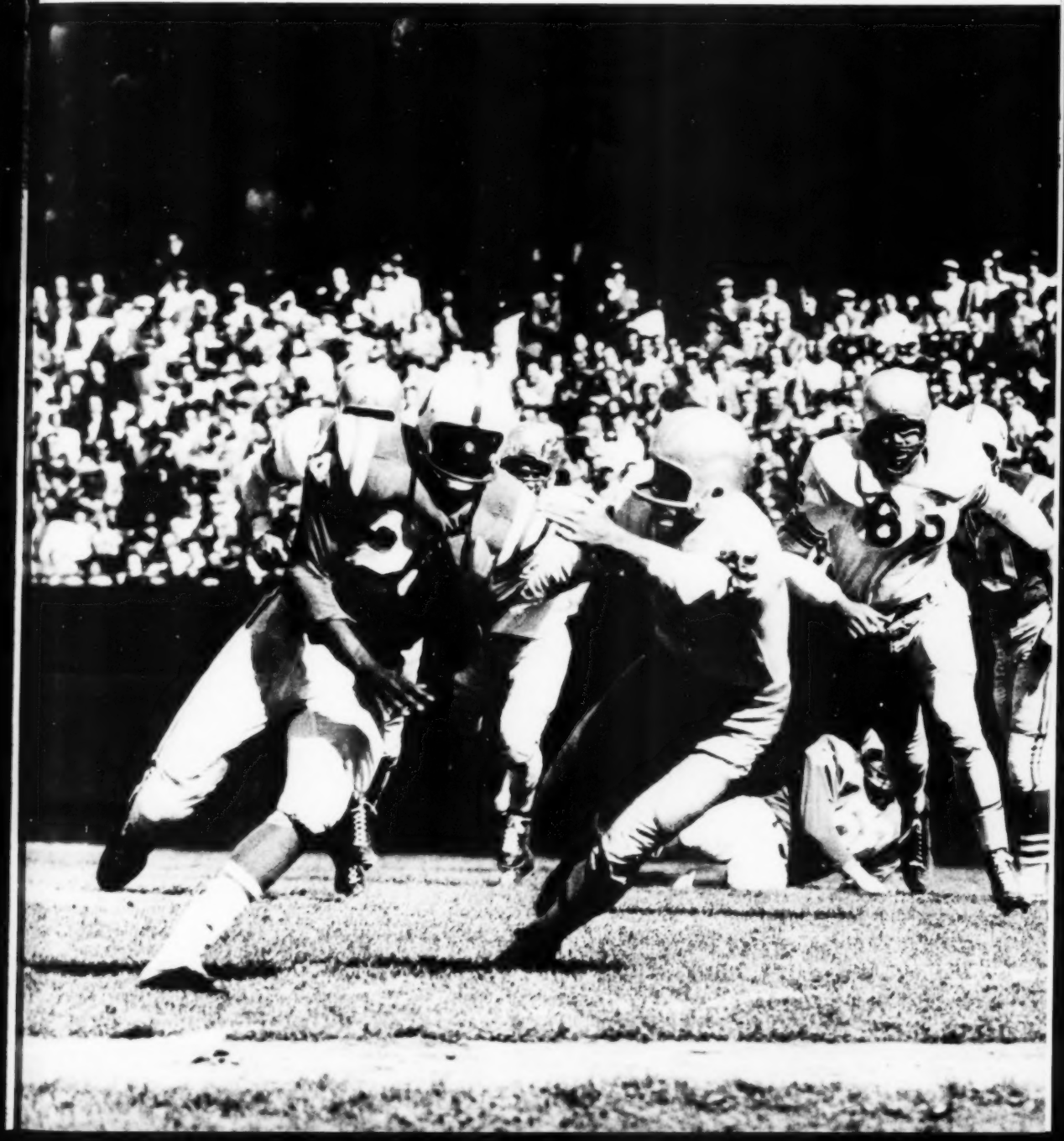
Perhaps we can illustrate the professional vs the non-professional. If the word "tiger" means ready, well prepared, confident, but not cocky, if it comes from hard but sound training, good leadership, and concern for the other fellow, then it suggests professionalism.

On the other hand if "tiger" signifies a "devil may care"—"what have we got to lose"? attitude, the term "tiger" is unprofessional.

Mr. W. H. (Bill) Grevemeyer, former Marine pilot and FAA General Safety Inspector, has said, "A good pilot is one who does not attempt to fly under conditions beyond his ability, employs considerable judgment at all times, and is constantly thoughtful both on the ground and in the air."

Regardless of how we label ourselves, true professional status belongs only to those individuals who continue to earn and deserve it by the application of professional standards to their work.

L. McNally, *Baltimore News-Post*



We live and work in some kind of an atmosphere . . .

. . . It can either support or undermine morale and performance.

Attitude

Pilots have reason to be proud. With healthy bodies, good intelligence and a fine balance of personality traits they represent a highly selected group of Americans. Their professional status, with effective training, would seem to be assured.

But there is still one more ingredient—an integrating force necessary for the attainment of professional standing. Let's call it attitude, state of mind, or just "feeling" about something.

Attitude, to a large extent, controls our actions. It's attitude that, in the end, determines what we do with our skill and knowledge, and in fact determines how much skill and knowledge we acquire.

We react to a situation more from how we feel about it than from a cold, logical point of view. Our feelings color what we see. Attitude is behind the professional approach. With one kind of attitude, striving to live up to the standards and ethics of a profession is a rewarding experience. Work becomes a pleasure. With another attitude there is a lack of desire or motivation, the goals are beyond reach because every attempt is half-hearted and without satisfaction for a job done well.

The Development of Attitudes

To develop something means to bring out what is already present in some state. The development of attitudes cannot be done in exactly the same way with all individuals because what is already present in the makeup of each of us varies from person to person. We don't all have the same inherent, built-in capabilities to be developed. Hence, there are no simple rules that will work every time. But there are some general guides that, when used with judgment, are worth giving a good try and there are some actions that rarely if ever work.

Attempts to "preach" attitudes are never very effective. We don't learn good attitudes by being told we should have them. The good leader never needs to talk much about the attitude of his subordinates. He develops attitudes in them by making each individual a worthwhile, producing member of the unit. He does this through leadership—including good planning, good training, good standards of performance, good supervision of each task as it is carried out, and the creation of a favorable atmosphere in all working relationships.

We can consider the development of the professional attitude under two general categories—Human Relations and Training.

Human Relations

It is distressing to hear of tension and friction among airmen. General meanness, threats, slurs, abuse, or even an "I'm-too-busy-for-that" attitude can "freeze" the mind, make it incapable of logical behavior. Both the giver and the receiver in such situations should give some serious thought to the basic causes of such behavior.

Why did the copilot fail to caution the pilot until it was too late?

Why did the airman neglect to mention the small oil leak?

Why did the junior pilot pretend to be sure of himself when in fact he was very unsure?

Is it possible that fear based on poor human relations produced the accident?

Worry, depression, fear, and anxiety are factors that should not be taken with you in the air. They help to build accident statistics.

We live and work in some kind of an atmosphere. It can either support or undermine high morale and pilot performance.

A supporting atmosphere generates the feeling of belonging—one of the great human drives and one basic to emotional stability. How we get the feeling of belonging depends on the specific situation. But a warm, friendly relationship, sound training, and good progress toward goals or objectives are all factors in a good atmosphere.

On the other hand, a negative, non-supporting atmosphere is characterized by the navigator who shows up late for the briefing with a sketchy flight plan—the commander who initials a safety regulation without understanding it—the pilot, who for his own convenience, violates flying regulations—or the individual who is no longer a pilot, professional or otherwise, because he flathatted the home farm.

Read a good modern book on psychology to better understand the reasons that underlie our behavior. There are many such books. If the first one you try is either too simple or too complex, don't stop there. Find out where to start and then keep going.

We can consider the development of the professional attitude . . . under two general categories—Human Relations and Training.

Training

Everyone, that is almost everyone, thinks he could do a better job of training,—teaching,—educating—than those who are doing it.

Perhaps familiarity breeds contempt—we have all spent so much time in school. But how many skillful instructors, on or off the job, have you known?

Perhaps you don't even think of yourself as an instructor. Do you supervise someone?—Have a copilot and a crew?—Hold briefings for your division? *You are an instructor,* and instructing (call it coaching if you prefer) is an important part of leadership and a vital ingredient of professionalism.

Here are just a few simple reminders that will pay big dividends.

When you want a certain level and type of performance you must do more than tell once over lightly. Think it through before you start talking; go through the procedure step by step emphasizing the critical items of procedure and safety; tell *and* show, do and check. Go over it again; see that others can apply the instructions in a practical way; correct errors in a firm but fair and friendly manner; provide for practice and repractice under your guidance. You may be surprised how much you learn.

It doesn't do much good when instructing to say "are there any questions"? Who wants to appear to be a "slow learner" and admit publicly that he doesn't understand, especially if the leader has given every indication of thinking he is doing a good job? You must *ask* some of the questions—again in a friendly, understanding manner. You will no doubt be surprised at how little of what you said has been understood. But isn't it better to know this and take the trouble to clear up the subject than to find it out later when it is too late? In aviation there is no place for the instructor whose attitude is "anything I forget to teach will

be covered on the final examination."

Another essential is that of letting individuals in training know where they stand or how well they are doing as measured by reasonable standards.

We must know exactly how we are doing. This is the principle behind spotting practice bombs on the range. How long would it take to learn to hit the bullseye if we were never told where each drop landed? Yet some individuals in positions of command never take the time to analyze each subordinate's performance and tell him where he stands.

The complexity and unforgiving nature of today's aircraft dictate that now, more than ever, there is a vital need on the part of all of us for the attitude which is representative of true professionalism.

When the chips are down the professionals must take the leadership if we are to survive.

We have said that one of the characteristics of a profession is that it has a code of conduct which its members strive to live up to. Let's create such a code.

CODE OF CONDUCT FOR PROFESSIONALS

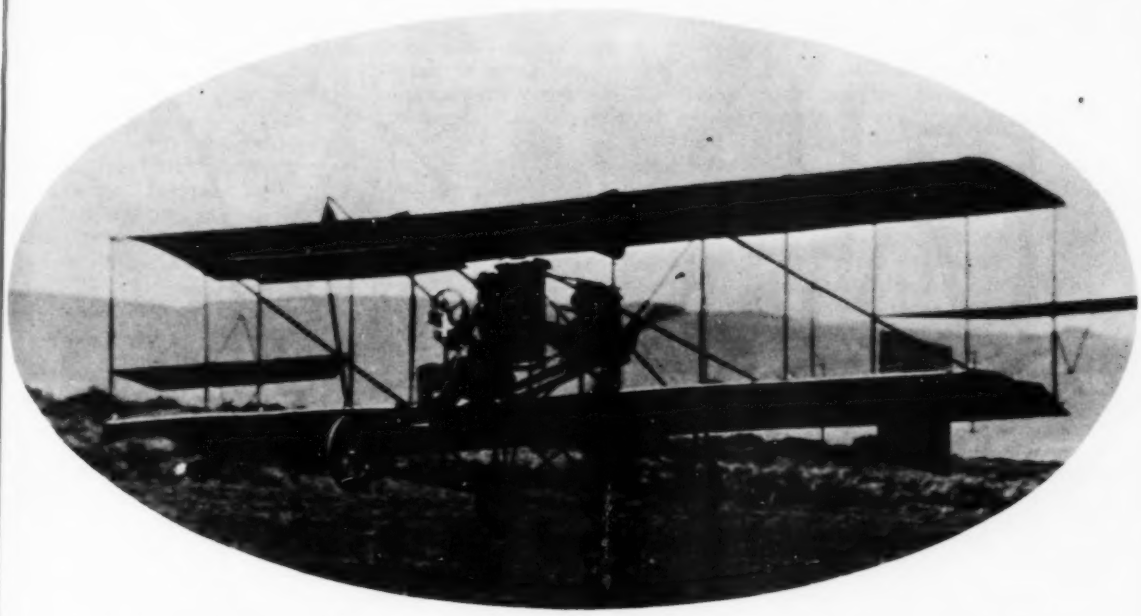
- **He will accept the responsibilities as well as the rewards of authority.**
- **He will so conduct himself at all times as to merit the confidence and respect of his fellows, associates and superiors.**
- **He will consider the acquisition of skill and knowledge in his profession as a never ending process and will accept the responsibility of study, research and investigation in his field.**
- **He will faithfully discharge the duties assigned him to the best of his ability.**
- **He will keep uppermost in his mind the safety and well being of those who depend on him.**
- **He will conduct his affairs with others in such a manner as to bring credit to the Navy, to aviation, and to himself.**

Approach to the Professional *was written by* COMMANDER HOMER C. ROSE, *USNR while on active duty for training at the Naval Aviation Safety Center.*

In civilian life he is assigned as Chief, Management Training & Training Development Branch, Training Division, Federal Aviation Agency, Washington, D. C.

His previous work experience includes that of Senior Training Specialist, Training Division, BuPers; Officer-in-Charge, Curriculum & Instructor Training, Amphibious Command, Atlantic Fleet; Instructor Trainer, Armored Command, U. S. Army, and Professor of Industrial Education, Southern Illinois University.

He is also the Training Officer, Naval Reserve Officers School, Washington, D. C.



NAVY AIRPLANE NO. 2, a typical Curtiss land plane of 1911. Operating instructions, below, makes it easy to understand how Standing Operating Procedures (SOP) today take on new significance.

State of the Art-1911

BACK in the old days operating instructions for aircraft were relatively simple. The following is quoted as an actual excerpt from the operating instructions issued with the 1911 Glenn Curtiss "Pusher" airplane.

"1. The Aeronaut should seat himself in the apparatus, and secure himself firmly to the chair by means of the strap provided. On the attendant crying 'contact' the Aeronaut should close the switch which supplies electrical current to the motor, thus enabling the attendant to set the same in motion.

"2. Opening the control valve of the motor, the Aeronaut should at the same time firmly grasp the vertical stick or control pole which is to be found directly before the chair. The power from the motor will cause the device to roll gently forward, and the Aeronaut should govern its direction of motion by use of the rudder bars.

"3. When the mechanism is facing into the wind, the Aeronaut should open the control valve of the motor to its fullest extent, at the same time pulling the control pole toward his (the Aeronaut's) middle anatomy.

"4. When sufficient speed has been attained, the device will leave the ground and assume the position of aeronautical ascent.

"5. Should the Aeronaut decide to return to terra firma, he should close the control valve of the motor. This will cause the apparatus tc assume what is known as the 'gliding position,' except in the cases of those flying machines which are inherently unstable. These latter will assume the position known as 'involuntary spin' and will return to earth without further action on the part of the Aeronaut.

"6. On approaching closely to the chosen field or terrain, the Aeronaut should move the control pole gently toward himself, thus causing the mechanism to alight more or less gently on terra firma." ●

FALL GUY

IT STARTED out as a nice peaceful hop of about 2+30 some 1000 miles in the F8U-1. I was wingman in a section and as the weather was to be CAVU most of the way with the destination VFR I didn't anticipate much in the way of excitement.

True, it was CAVU until the sun got lower on the horizon. But we were going west and the combination of haze and setting sun just does not mix. Nearing our destination we started down from about 46,000 to about 8000 feet. The PAR was out and the field had just gone IFR. Aerology reported a measured 900 overcast with 4 miles in haze but

The purpose of Anymouse (anonymous) Reports is to help prevent or overcome dangerous situations. They are submitted by Naval and Marine Corps aviation personnel who have had hazardous or unsafe aviation experiences. As the name indicates these reports need not be signed. Forms for writing Anymouse Reports and mailing envelopes are available in ready-rooms and line shacks. All reports are considered for appropriate action.

— REPORT AN INCIDENT, PREVENT AN ACCIDENT —

I wouldn't have bet on it later.

We started an ASR from 6000 at 12 miles from the field. Nothing special but it was my first section penetration in type and one that I will long remember. By the time I sighted the runway and started dropping back for a landing interval, my leader was also slowing up. I didn't increase our nose to tail distance very much if any.

With 9000 feet of runway remaining the leader was touching down. But since there was a slight right crosswind he had drifted into the middle of the runway. This left me, being on the port side, with little or nothing in the way of unobstructed hard surface ahead.

The way I had it figured, since we were right on the approach speed, I could just fall in right behind him and get my separation with a little extra braking action. I forgot about that 2½-foot hole ahead of me, gushing forth a couple of thousand pounds of black smoke and lots of hot air.

Just as I was about to touchdown my left wing dipped sharply from jet wash and all I could remember was that I jammed the throttle up to afterburner and wiped out the cockpit with the stick a couple of times.

My trusty steed staggered into the air with me hanging on to the seat firmly. Later the RDO told me I did touch down but you might have said I simply fell out of the sky.

At about 800 feet I came out of burner, trying to stay beneath the soup, and after rearranging myself, turned downwind. At the 180 spot I could not see the runway (where was their lousy four miles visibility?) so I asked the tower to turn up the high intensity approach lights. The lights came into sight between the 90- and 45-degree position and though I was low on speed I went on in to an uneventful landing.

After talking to the leader, who was also my instructor, we came to some conclusions that might have prevented the incident. Two prior syllabus hops called for a section penetration with the student on the wing, but neither penetration had been made due to weather on one and a full GCA load on the second. Though the destination was VFR, the brief on this hop might have been better, taking into account the type of approach we might be expected to make. I could have used the parallel runway had I thought about it or spotted it in time. Due to the crosswind I should have been on the upwind side.

They say chalk it up to experience but this almost ended up being a bruised pilot and banged up airplane.

LIGHT FIGHT

COMPLETING a night IFR penetration I broke out VFR below the clouds and headed toward the field at 1500 feet. In some way the one-cell flashlight in my vest came on and the light momentarily blinded me, besides causing distracting reflections on the canopy.

Traffic around the field was known to be fairly heavy and I tried hard to get the light doused. With my gloves on I couldn't turn the switch off and I had trouble trying to tear the light off the vest. My solution was to lean forward so the light would not be directly in my eyes and proceed with the approach.

On base leg the light went off of its own accord (I couldn't find out why) so the landing was made without further difficulty. This is probably an isolated case but when it happened it was unexpected and therein lies the hazard—at low altitude or in formation such a distraction is dangerous.

DISCONNECTED

HAVING been grounded for some months, I was anxious to get back to flying again and when the chance for some copilot time in an S2F came up, I was hot for the program. The flight was a hurry-up affair but the pre-takeoff cockpit procedures were complete if rapid.

In the process I removed the disconnect handle for the right seat controls and started to move the yoke to check engagement. At the same time the pilot moved his yoke. Feeling the resistance of his movements, which indicated that the ailerons were engaged, I assumed that everything was in order. This was only my second ride in the S2F so I went on with the checkoff list, trying to find all the items listed as we came to them.

The pilot started the engines but I was to taxi and takeoff. I ran up the engines and we went over the pre-takeoff list. Briefing me on power settings and airspeeds, the pilot said he'd handle the power reductions, letting me concentrate on flying.

We rolled out onto the duty and started down the runway. I was able to maintain directional control quite easily. My usual procedure is to set the tab and let the aircraft fly itself off. With the airspeed building up I waited for the nose to come up. It pitched up as I expected and I eased in some forward pressure . . . No reaction!

We were airborne, nose high while I reached full forward throw on the yoke with no apparent results. Meantime, the pilot had been concentrating on the power reduction and was quite startled when he looked outside. It happened so fast, with me being rusty besides, I never did think of reducing power or using the trim tab. The pilot quickly grabbed his yoke and applied nose down pressure which brought us back under

control and, also engaged my elevators!

I learned that the ailerons are not the only control surfaces which must be connected in the S2F. It takes a positive check to make sure the elevators are likewise engaged. *Now* I know, but it was a poor way to learn.

LOST COMMUNICATIONS

WHILE IFRing an R4Q to an East Coast air station we broke out of the clouds into a small hole and several seconds later my copilot and I were startled to find one of our squadron aircraft trying to nuzzle up on our flank like a lonesome puppy. Almost simultaneously we heard ATC frantically calling this same plane on guard channel.

Assuming he was in trouble we broke off our base course and tried to offer what assistance we could, meanwhile letting ATC know where we both were. After much hand waving and wing waggling between aircraft, we determined he had a radio failure and wanted to get down —as soon as possible. So, we started procedures to shoot (heaven forbid) a section GCA with our boxcars.

Suffice it to say that having flown no formation in two years, then attempting a section GCA in solid instruments in a large, cumbersome aircraft, with no inter-aircraft communication, is not exactly the thing to do if one intends to avoid ulcers and falling hair.

As luck would have it we lost our wingman seconds after entering the soup. We pulled to the left, hoping he would go to the right . . .

The story had its real beginning before the accidental rendezvous and we now take up the narrative of the pilot flying the disabled R4Q.

It started as a routine logistics flight with a crew of five, two passengers, and sufficient cargo for a max gross weight takeoff. Weather at departure was 1500 overcast with no reported tops. After a 55-minute wait in the runup spot, ATC clearance came through with an assigned altitude of 10,000 feet.

Climbing out after takeoff we went into the clouds at the predicted 1500 feet and it was solid until we broke out in a small hole at 8000 feet. At this point an overvoltage condition of one generator shorted out all navigational equipment, communication radios, and most important of all, every gyro instrument! Even the needle came to a standstill though the ball was as lively as ever. To make matters worse, there was the possibility that we would be unable to switch fuel tanks. In which case there was fuel for only two hours at normal cruise.

Staying in the hole we got to 9500 feet before being forced to level off (it appeared solid above that altitude). There we were, stuck within the confines of our VFR hole which could vanish any time. Something had to be done all right, but the most logical thing seemed to check our chute harnesses.

Then enter salvation in the shape of another R4Q. After joining up and getting the situation understood we started down.

The lead aircraft slows down, lowers the gear and we do likewise. Only we decide to save fuel and pull our gear up. In the next seconds we enter the soup, descending. Good grief! We've lost him! I turn right. I glance at the airspeed — it's building rapidly.

The altimeter is unwinding—rate of climb pegged down. The ball tells me nothing and the standby (magnetic) compass is spinning. I suspect a right spiral and this message flickers out to hands and feet—left aileron, yoke back.

We're climbing . . . the altimeter has stopped and begins winding back up. I'm considering the nylon letdown when we break out into another VFR hole. The aircraft is in a level turn to the right at 10,000 feet (later I estimated we were in the soup between two and three minutes).

A hasty consultation results in turning toward the ocean where we hope to find a break in the ceiling. No luck. We reverse course. It's kinda quiet on the flight deck now, I'm trying to remember all I can about bailouts and parachute landings.

Then, for the second time today there is a whoop and a holler in the cockpit—our sister ship is again heading toward us! Somehow (radar maybe) we're found again.

This time we join up in a loose tail-chase, we want to be far enough behind so that if we lose him the mid-air possibilities are less. We turn north but it looks like he's heading into the soup—here we go again! No, by golly. It's not so thick here. We're still in contact. As long as I can see him I have no difficulty maintaining altitude.

Twenty or thirty minutes go by in a gradual descent. Suddenly the copilot catches a glimpse of the ground, then another, and we're below the overcast at 4000 feet indicated altitude. Only a few miles ahead is a field and we make an uneventful landing. Rolling down the runway I suddenly remember that one of our passengers is a chaplain . . . it's cause for a little speculation.

THREE'S A CROWD—

TWO P2Vs were engaged in night searchlight practice with a submarine. One aircraft had just made a successful run when an unidentified plane passed overhead in the opposite direction. The pilot relayed this info to me.

Being alerted we started in on our searchlight run but when just about in range the copilot called to break it off. He had sighted the "unknown" dead ahead, level, and closing. The only light being shown was the rotating beacon. We were at 450 feet and made an immediate descent to 300 and a rapid right turn.

A climbout to 1500 feet was made and we attempted to communicate with the "Bogie." There were negative results so we orbited and watched the intruder make another run on our sub. Then we, and our sister P2V fell in behind him and made several more practice runs. When we both left for home the unknown was still making searchlight runs and still had only the rotating beacon on.

In this region there are two submarine exercise areas immediately adjacent to each other and we later found the strange aircraft had identified our sub as his, and proceeded accordingly.

headmouse

Have a problem, or a question?
Send it to HEADMOUSE—he'll do his best to help.

Replacement of Magneto Breaker Assembly

Dear Headmouse:

During the past several months I have become involved in discussions relative to the operation of magnetos installed on naval aircraft engines. These discussions eventually center around the removal or replacement of the breaker assembly in the field.

After 20 years experience in aircraft maintenance, I have formulated opinions based on personal observations which I believe should be evaluated and commented on by higher authority. Inasmuch as your magazine is devoted to flight safety, and has widespread circulation among aircraft maintenance personnel, these opinions are forwarded for appropriate evaluation and comment.

I have been an instructor in the Ignitions Phase of the Advanced Aviation Machinist's Mate School. This billet gave me an opportunity to delve into that aspect of magneto operation that bordered on the engineering phases. With this background some of the dangers of improper magneto maintenance have become very apparent. It is one of the reasons why I believe that magneto breaker points should not be replaced in the field. In order to place this opinion in a more logical sequence the following format is used.

A. *Problem*

1. Replacement of magneto breaker points in the field without following internal timing procedures, magneto test bench run-in, or use of the engine analyzer.

B. *Discussion*

1. Replacement of magneto breaker points between overhauls is required when excessive burning or pitting is observed or when other apparent discrepancies are noted on routine checks. While the apparent reason for breaker point change may appear to be a mechanical fault; generally speaking the malfunction may be brought about by failure of the primary condenser, faulty primary coil, excessive or inadequate lubrication of cam follower felt, excessive cam follower wear, and vapor from engine oil or grease in the cam compartment. The changing of magneto breaker points may correct excessive or inadequate lubrication of the cam follower felt. In all other cases, without any further corrective action, breaker point replacement may again be required within a short period of time.

2. On magnetos used on small radial engines, i.e., seven and nine cylinders, and in particular the SB9RN magneto, the internal timing of the magneto is, comparatively speaking, a simple procedure. However, replacement of the breaker assembly will usually not remove the underlying cause of failure. In addition, without a magneto test bench, or use of an engine analyzer, no positive check of the coming-in speed or the true mechanical or electrical operation of the unit can be made. While it is true that point duration (period of time points remain open) is usually identical for all lobes of the cam the E-gap for the various lobes may vary. A magneto with excessive point duration can possibly have the E-gap adjusted on the high side of No. 1 lobe. Due to this excessive point duration the short E-gap on one of the other lobes of the cam may result in a lack of full "saturation" of the primary during the E-gap travel of that particular lobe. As a result that particular spark plug will have a weak spark. That particular plug may fire when new or overhauled but after a period of engine operation, due to eroding of the gap, the plug may fire intermittently and eventually fail to fire. Replacement of the plugs in the engine will correct the magneto drop off but yet the real cause of the malfunction has not been corrected.

3. On twin row engines the internal magneto timing is more critical due to the increase in the number of cylinder firings required in the same degree of crankshaft travel. In addition the setting of the E-gap position is accomplished by ratcheting the cam to obtain breaker point opening at the desired position of magnet shaft travel. As a matter of classroom instruction we permitted students to replace breaker assemblies by aligning the step in the cam with the mark on the magneto housing (a normal field procedure). In the majority of the cases subsequent magneto test bench operation showed the magneto to have a too high "coming in" speed or particular gaps not firing on the test electrodes. The same magneto and

breaker assembly, after having been properly internally timed, passed magneto test bench operation.

4. The relationship of E-gap, point opening and point closing can be viewed upon the scope of the Engine Analyzer. A properly timed and adjusted Sperry Engine Analyzer is accurate within 1-degree of engine crankshaft travel. The use of the engine analyzer by competent personnel would remove any objection to changing of magneto breaker assemblies in the field. Until such time the indiscriminate changing of these assemblies may be the basic underlying cause of ignition failures with the resultant loss of engine power and possibly the loss of an aircraft where the power plant is used in a critical combination.

FRANCIS R. SCHIRRA, ADC

The Scintilla Division of Bendix Aviation Corporation was requested to express their views concerning Chief Schirra's letter. The reply is quoted below.

Gentlemen:

We have read the referenced letter with considerable interest and would like to congratulate Chief Schirra on his very realistic approach in discussing the subject problem.

We concur with the Chief's recommendations except for the statement contained in B.4. of his letter. He has stated that the relationship of E-gap, point opening, and point closing, can be viewed upon the scope of the engine analyzer. In reference to viewing the E-gap of a magneto on the engine analyzer, we fail to see how this could be done. The E-gap is a mechanical relationship between neutral position of the rotating magnet and the point at which the breaker points are timed to open. This is expressed in degrees of magnet shaft rotation, and can only be determined on the bench using a degree wheel. It cannot be determined with an engine analyzer which, of course, is capable of indicating magneto primary wave forms only.

With regard to observing point opening and point closing on the engine analyzer, we acknowledge that this, of course, is possible and in fact is one of the express purposes of the engine analyzer. However, our experience has indicated that the accuracy of any ignition analyzer is not adequate to determine the breaker point opening period to bench timing tolerances. It is possible to recognize an internal timing condition which is far enough out of specification to affect normal engine performance. However, we certainly would not recommend the use of the engine analyzer to verify the accuracy of breaker point timing when the points are replaced without adjusting them by the use of a degree wheel.

In summary, it may be said that this Division does not recommend replacement of breaker points on magnetos or distributors unless the unit is removed from the engine and the breaker points installed and adjusted by competent personnel using the recommended degree wheel and timing pointer and following the procedures outlined in applicable overhaul instructions. We do recognize the fact that there may be conditions of emergency where this is not possible. However, this should be the exception rather than the rule.

C. E. SCHADER
Supervisor Service Engineering
Service Department

► *The Bureau of Aeronautics found Chief Schirra's letter basically satisfactory and appropriate in view of the many instances wherein breaker points are replaced when troubleshooting on engine. BuAer concurs with the manufacturer's comments concerning paragraph B4 of Chief Schirra's letter. Chief Schirra is commended for his initiative and application in studying and presenting this problem.*

Very respy,
HEADMOUSE

Suits Me

Dear Headmouse:

I would like to comment on the answer given by Headmouse in the November '59 issue of APPROACH, on Poopy Suit Outfitting.

(1) The Supply System is *not* inflexible (leastwise not on this problem).

(2) No one has to pay for the suit with Bravo funds because the material is APA and is not a charge to an end-use allotment.

(3) The RAG does not have to pay for the equipment and they can give it to the pilot when he leaves the training squadron for further transfer to an operational squadron.

The Section "QH" allowance list provides for 100 percent allowance of anti-exposure suits. Since this equipment has to be individually fitted it is only logical that upon transfer pilots should take this equipment with them. There are two simple means by which this can be done. If the operational squadron is aboard the same station as the RCVG a simple transfer can be accomplished by the RCVG issuing a credit DD-1150 and the operational squadron issuing a DD-1150 to offset the credit, thus keeping the books in balance; or if the squadron is deployed the RCVG can issue a credit DD-1150 to the supporting station, which in turn can invoice the material to the ship, noting on

the invoice that the material is being forwarded by the pilot concerned.

The ideal solution to the problem is to modify the authorized list of personal issue flight gear items to include anti-exposure equipment. . . . .

W. J. HENNESSY
LT, SC, USN
Assistant Supply Officer
NAS Oceana

► *Sorry about the bum dope regarding the poopy suit and its funding. Several others, including BuWeps, gave us the facts essentially the same as yours.*

The Coverall, Anti-Exposure Suit, Mk-IV (poopy suit) is not chargeable to a squadron's Bravo allotment. It is an Appropriation Purchase Account (APA) item and is requisitioned by a squadron through the Sect. "H" allowance. It is not a log-book issue item. Consequently each squadron (including Replacement Air Groups) is responsible for the fitting and issuing of the suits to its pilots. Furthermore, when a carrier is deployed, its supply department normally carries a nominal number of the suits to augment the squadron's supply.

The only personal equipment items chargeable to a squadron's Bravo allotment are the "D" cognizance items, such as orange flight suits, summer gloves, etc. They are under a single manager procurement for all the armed forces. Since 1957, several pilot equipment items have been placed under single manager control.

Very resp'y
HEADMOUSE

S2F Exit

Dear Headmouse:

Reference your article "Night Ordeal" in the August issue. It seems that the copilot would not have survived if the pilot's overhead hatch had not opened accidentally.

Why not incorporate an emergency opening feature for the pilot's and the copilot's overhead hatches in the S2F? The crewmen have an emergency opening feature on their hatch, but under some circumstances it appears that the pilots just can't get back to the rear and out in time.

J. J. MAC PHERSON, LT
BTG-1, NAAS Saufley

► *In cost cases where pilot/copilot overhead hatches have jammed shut or partially shut on crash landings/ditchings they were the result of the hatch not being set in the* fully open and locked *position prior to impact. Where collision with the ground or ditching was* controlled, *little trouble has been experienced with the hatches.*

BuAer endorsement on the accident from which the article "Night Ordeal" evolved states the following in part:

"A sliding door or hatch which can withstand the impact loads of a high speed, unforeseen *water crash such as occurred in this accident, and assure retention of its functional capabilities, is considered beyond the spectrum of practical design application."*

Grumman engineers state that it would not be feasible from structural, space and cost standpoints to incorporate a jettison feature in either the overhead pilot hatches or the pilot side windows.

Faced with the replacement of crazed side windows, one VS squadron experimented with pilots cutting their way out. At the "go" signal, pilots scribed a large circle with their survival knives, then proceeded to pound the plexiglass out to provide an exit. Although the number of attempts was limited, time to complete this path of egress ranged from 1 minute 15 seconds to about two minutes.

Very resp'y
HEADMOUSE

Influence of the RCVGs on Accident Prevention

July 1959 marked the end of the first year of Replacement Carrier Air Group operation. RCVG-trained pilots represented 28 percent of the average number of fleet pilots flying A4D, F4D, F11F, F3H, FJ-4 and F8U aircraft during FY '59.

A study of their safety record as opposed to squadron trained pilots showed only 1 out of 11 RCVG trained pilots had an aircraft accident whereas 2 out of each 9 fleet squadron trained pilots had an accident. Only 1 in 24 RCVG trained pilots were involved in a pilot factor accident as contrasted to 1 in 9 for squadron trained pilots.

The RCVG program is estimated to have saved the Navy approximately 40 million dollars to date. The impact of their training should be greater in FY '60 as a higher percentage of operational squadron pilots will be RCVG trained.

YOU WROTE THE CAPTION

—and the response was astounding! Judging by the replies we received, everyone *reads* AP-PROACH. *One thing that we noticed particularly was the great number of readers who automatically associated shovels with the act of* burying *an object. Only one caption considered the opposite situation and had one of the gents saying, " . . . alright, so you think anyone will believe we dug it up while prospecting for uranium?"*

Our thanks to all who sent captions—here's all the selections that space permits.

"Here it is Thursday, and we have to have it up by the weekend!"
—C. W. Hill, AO2, NARTU, NORVA

"After we bury it you draw the map."—*Steve Balme, AN, VR-6*

"At least they could have left us some water."
—*H. Corvus, ADJ2, NAS Gtmo*

"I'm glad the skipper had us paint out the letters on the tail."
—*B. Saffery, China Lake*

"Let's cover it up . . ."—*W. E. White, ADC NARTU Norfolk*

"I knew we'd never make it from Australia."—*G. C. Lloyd, NAS Jax*

"Maybe we can turn it into a motel or a night club."
—*D. J. Stafford, USAF*

"You get the jack, I'll check the spare."—*Dave Hurlbut, ADR3, VR-6*

"Since it's abandoned, do you suppose we can claim salvage rights?"—*LTJG Gruner, NJS, Newport*

"Yeah, and I thought you switched tanks!"—*J. Greene, USMC*

"Last thing he said was to paint out NAVY and put MARINES there."—*LT J. S. Fehrs, NAS Corpus Christi*

"Think it'll take less than 25 man-hours?"—*P. Sykes, NASC*

"You push, I'll steer."—*Mrs. R. A. Cooke, Key West*

"You heard what the Chief said—bury it!"
—*CDR R. L. Fisher, AEWingLant*

"I told Orville and Wilbur it would never fly!"
—*LT. D. P. Smith, GCA #2*

"Why don't we just rig an obstruction light and leave it here?"
—*CAPT L. T. Morse, NROTC Notre Dame*

"Don't worry, once we bury it who'll know we forgot to switch tanks?"—*CAPT. C. F. Schramm, NAS Pensacola*

"Wonder how long before someone misses it?"
—*NavCad J. T. Weatherbie, NAS Pensacola*

"The Chief wasn't kidding when he said to bury the trash."
—*A/SGT R. B. Bailey, USMC*

"You dig the grave, and I'll write the epitaph."
—*LTJG R. T. Bailes, VF-92*

"You and your %$#*¢@ sand-dune parties!"
—*S. Cate, AN, ALF El Centro*

"First we've got to remove the clock."

"Let's paint USA on it and go get a beer."

The following by CNATRA, Aviation Safety Office:

"Now we know why we were relieved early from mess cooking duty."

"Let's let the air out of the tires."

"When this happened aboard ship we just gave it the deep six."

"How much longer shall we wait for the NASC investigator?"

"This is a helluva location for a lunch wagon."

"If we chop off the tail it'll be a lot easier to bury."

"What some people will do so they can RON at Vegas!"

"I could swear I heard him say 'take off power'."

"We'd better hurry—the pilot wants the gear down before the Safety Officer gets here."

"Let's bury it before the skipper finds out it's missing"—and many variations thereof.—*LTJG G. L. Neale, VF-84*
LTJG T. C. Smith, HU-1
LCDR J. M. Anderson, VP-9
LTJG F. A. French, NAS North Island
LT A. G. Lane, VA-125
LCDR J. H. Holmes, BuAer
W. G. Hancock, Jr., AMC, CNAVANTRA
J. P. Patton, DT1, USS Randolph
J. J. Manfield, DT3, USS Randolph
1LT J. H. Tewksbury, USMCR, RATCC 38M
R. L. Mix, AG1, FWF, NAS Seattle
M. H. Ingram, CAFSU, ComNavAirLant

"Hit it again, I think I saw it move!"—*LCDR D. M. Hume, NASC*

BINGO

A LANDING FIELD, EVEN A FLOATING ONE, WHICH IS IN SIGHT IS INHERENTLY PREFERABLE TO ONE WHICH IS 100 MILES AWAY . . .

THE term "Bingo" has several recognized and quite different meanings. It can be used to instruct a pilot to return to a presently assigned radio frequency in case no contact is gained on a newly assigned frequency. The term is used to describe the diversion of an aircraft to a previously selected field when safe recovery by a controlling carrier is doubtful for any reason. Bingo is also the name of a widely played and highly frustrating game of chance.

But our discussion is devoted to Bingo as it applies to diversion of carrier based aircraft to land fields. It also is presented in an effort to remove the element of chance from Bingo as completely as possible.

Here is a quotation from an AAR arising out of an accident which occurred some time ago at a diversion field, "The Bingo policy should be studied carefully and revised if necessary in order to allow each case to be weighed on its own merits."

This accident involved an F3H-2N on a carqual flight. The pilot had made two good arrested landings and had taken one voluntary waveoff during the flight.

While the pilot was on downwind for his fourth pass, the ship was informed that the designated Bingo field had gone IFR. A VFR alternate was selected and the Bingo fuel state was recomputed. Now the *Demon* had Bingo fuel plus 100 pounds. He was waved off on the fourth pass, which was high.

The pilot was then ordered to proceed to the designated Bingo field with instructions that he was to continue on to the VFR alternate if the Bingo field remained IFR.

When the F3H-2N arrived at the diversion field, not only was the station IFR, but it was well below GCA minimums. A weather observation taken at the time of the accident, 0732, showed sky obscured, ceiling zero, visibility ⅛ mile in fog, wind east at one knot, temperature 49°, dew point 49°

Though the pilot was aware that the field was IFR, he did not know just how bad the weather was. He elected to make a GCA pass rather than to proceed immediately to his alternate. The first pass resulted in a waveoff due to poor line up. Another GCA was attempted, ending in collision with the ground when the pilot was given and followed an instruction to descend below the actual altitude of the terrain.

It was estimated that, at the time of impact, there was still nearly enough fuel aboard to reach the alternate where the weather continued to be 18,000 feet thin broken, 50 miles visibility.

Many factors were considered in the analysis of this accident—a hurried GCA directed from a hastily manned GCA unit—insufficient information passed to the pilot—reluctance of pilot to proceed to alternate, etc.

The Board offered the opinion that the decision to Bingo this aircraft was based only on the fact that Bingo fuel state had been reached. On the other hand it would be a simple matter to cite accidents where the decision to Bingo has been deferred until diversion is no longer an available "out" and fuel exhaustion results.

The burden of making the final decision to Bingo an aircraft from a carrier to the beach rests with the Commanding Officer of the carrier. There are many elements which go into the making of that decision.

Constant liaison between the

The pilot was anxious to get back to the ship to complete his qualifications.

ship and the designated Bingo field must be maintained during operating periods. The ship must have the very latest weather for the Bingo destination, all usable alternates and en route.

Especially during qualification flights the capabilities of all pilots must be made known to the carrier CO by the squadron involved. A pilot should not be ordered arbitrarily to the beach just because he is down to Bingo fuel state. A landing field, even a floating one, which is in sight is inherently preferable to one which is 100 miles away unless other factors make it otherwise.

This idea of flexibility is in contrast to the occasional hard and fast "Bingo policy." Each situation should be evaluated as it arises and this can be accomplished by answering a few vital questions:

- Is this pilot likely to make a successful arrested landing on board, considering existing weather, pitch, wind, deck, and aircraft conditions?
- Is the weather at destination suitable for diversion including GCA passes and availability of alternates which allow for acceptable minimum fuel reserves?
- Is communications with the beach rapid and reliable enough to permit confidence in forecast weather and alertness of needed station personnel?
- Is this pilot likely to cope successfully with existing en route and terminal conditions if Bingoed, with regard for emergencies which may arise?
- What action is suggested by operational commitments?
- What is the recommendation of qualified personnel (LSO, Squadron CO, other competent personnel) and with what degree of certainty is it made?

There are the guide lines. They are only some aspects of the problem which affect the ultimate decision. They are not so conclusive as to supplant the imagination or even instinct supplied by the experience of the commander and his advisors. ●

OPPOSITE PRESSURE

"We were on a rocket hop, myself as pilot of the S2F and a senior officer of the squadron as copilot. I had made a dry run on the target and, sighting a couple of fishing boats near the area, we had gone down to about 300 feet to try to wave them out of the area. The run was set up at 2100 rpm and 28 inches manifold pressure. Coming out of it I eased into a gentle climbing turn to the left, climbing about 500 feet per minute.

"At about 800 to 900 feet there was an abrupt noseup of the aircraft. I immediately applied forward pressure and looked to see if the copilot had taken over and pulled up to miss another aircraft, bird or something. His hands were not on the controls and he said something to the effect, 'I didn't do it, I hope you did.' I said I had not.

"Just about the time we got to the level position there was a forward surge on the yoke. The next minute I was pulling back as hard as I could to keep the nose near the horizon and I thumbed full back tab. I pulled back for approximately 15 to 20 seconds or longer; I'm not positive.

"I would say at this time I had 2300 rpm and I think about 32-35 inches mp. I then applied more power. The nose came up and we began to climb and I said to myself, 'We got it made, we can at least get high enough for

'He and I were working against each other!'

all of us to jump'."

"We had climbed to about 1500 feet or more when the copilot reached up and pulled the power back and said, 'We can't hold it, we better ditch.' "

The aircraft now nosed over into approximately a normal descent according to pilot witnesses in the area. In the left seat the pilot was still maintaining tremendous back pressure. Impact with the water was hard and the aircraft almost immediately dug in, smashing the nose section. Ditching occurred about 100 yards off shore in seas running about 8 to 10 feet. After stopping, the forward section of the aircraft was under water.

"I started to get out," continued the pilot, "and I couldn't move. My first thought was that the whole instrument panel was setting in my lap. Then I realized my safety belt was still fastened. I unlocked and tried to get up but my right leg was caught.

"Working frantically to free it, I reached for my sheath knife on my right leg. It was gone. I had intended to cut my big boondock shoe off. It felt like it was holding me and I can remember thinking that this is the way a man drowns. Finally my foot came loose, I opened my hatch—it opened ridiculously easy—and I went out.

"I saw the copilot swimming toward shore. He had not worn a mae west and I started paddling the best I could to catch up with him. He would disappear in every wave and I would think he wouldn't make it up. My leg was completely numb and useless. It felt like a fish tail flopping in the water and I figured it was broken.

"Finally I caught up with him about 20 to 30 yards off the beach. I put my arm around his waist and grabbed a handful of flight suit to hold him up while paddling with my other. He told me to let go but I was afraid he might not make it because he seemed badly hurt. He said I was hindering his swimming.

"A big wave put us on the beach and a man there helped pull the copilot away from the water. I crawled up behind him. A short time later a helicopter picked us up and took us to the hospital. He had a broken ankle, broken ribs and multiple bruises and cuts. I had a badly sprained ankle, twisted knee, cut knee and multiple scratches and bruises.

"This is the story as I know it and see it. However, yesterday afternoon after having my first real discussion of the accident with the copilot, I was struck dumb when he said he figured runaway back tab. Then he said something to the effect, that, 'when you added power I didn't figure we could hold it; it would climb up and stall and I was already applying about all the forward pressure I could stand.

"I told the copilot that I had tabbed full back tab and had just about pulled my arms out of the sockets trying to keep the nose up and that when I added power I thought we had it made. He answered, 'No, we couldn't hold the nose down with power on, so I pulled it off to ditch.'

"No one but God himself knows what those few statements of fact from the copilot did to me. I was nauseated. I had and still have knots in my stomach to think this is possible. It is not only possible, I am convinced it is what happened. *He and I, by some quirk of fate, bad luck, timing or what have you, were working against each other!*

"How? I cannot say. I would swear he was pulling back with me. He is just as convinced I was pushing forward with him.

"The copilot's account of the accident will, I think, be just about the reverse of mine as far as pushing and pulling is concerned. For example, he says there were two up-surges. I remember only one. It now appears that he had his knees in front pushing on the controls and I had mine kind of hooked behind, pulling.

"I would like to state here that the copilot is one of the best, most capable pilots I have ever flown with. I have been at it 16 years myself, including crop dusting, pipeline patrol, instructing, passenger hopping and generally barnstorming the country so I'm not exactly a greenhorn pilot. My point is this—when this statement is let out, every pilot will say, 'This could never happen to me.'

"It is fantastic and it's hard for me to believe it. I don't believe the copilot believes it yet. I do know I was pulling my guts out to get the nose up. The copilot says he was pushing his out to get the nose down. It's as simple as that.

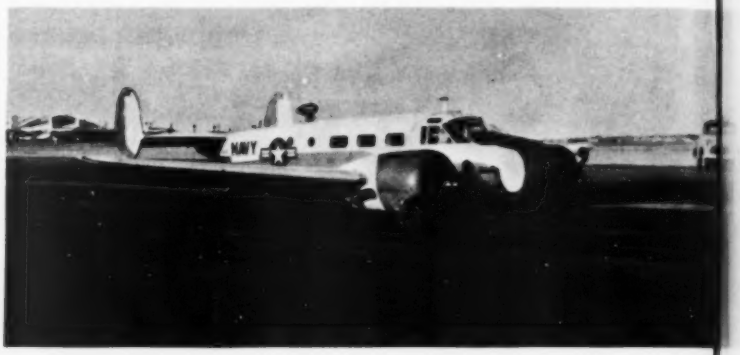
"And, it could happen to you."

DOWN AND OUT—The SNB's landing approach and touchdown was normal; however, shortly afterwards, the landing gear retracted, the aircraft settled, then slid on the belly for about 600 feet. There was no fire and no injury to the pilots.

"I was flying in the left seat as first pilot," explained one of them, "and since the copilot was requalifying in the SNB he was making the landing. Approach to the runway was good and touchdown was normal with a very slight bounce.

"To give the copilot a little better ground control and get the tail down I reached down for the flap control and never realized I had pulled the wheels up until the plane had settled."

Now the SNB is, and we quote from a recent issue of *Naval Aviation News*, "affectionately referred to by a generation of determined pilots as 'Sweet Nellie Brown,' 'Slow Navy Bomber,' 'Sneeb,' or just plain 'Bug Smasher.'" There is also a good-natured discussion going on as to the time of the first Navy delivery. Recent information points to the fall of 1940 as the earliest and thus, in the near future, the SNB will have been around some 20 years.



A 'helping hand' turned the landing into an accident.

In spite of the aircraft's distinguished age—she got Navy markings when biplane fighters were still in service—the old lady is regularly subjected to the indignity of a burlesque prattfall; no landing gear.

This one developed from the pilot's procedure of always raising the flaps immediately after touchdown and having the plane "cleaned up" by the time he was ready to turn off the runway. Raising the flaps after touchdown is sometimes necessary. It was the general opinion of the accident board that under crosswind conditions, flaps should be raised as soon as possible after touchdown but, "It appears," said the board, "that sheer carelessness on the part of the instructor pilot caused the accident. This carelessness was probably created by a feeling of laxity that is commonly found among pilots who are flying the *Beechcraft* for proficiency purposes." ●

Too Much Emphasis on Safety?

EVERY so often we hear a few growls about too much emphasis on aviation safety. That we worry more about aircraft accidents than we do about combat readiness. That if we are so all-fired anxious to be safe—why not just lock all planes in the barn and have a 7-day happy hour each week. (This would be safe?)

As the gambler said, "Senator, I'm glad you asked me that question."

Some of us cut our flight teeth on the old maxim that "a cautious fighter pilot isn't worth a d—, not even to himself." BUT they have forgotten the other half of the old saying—"a good safe one is a boon to his country and a joy to behold."

Overly-cautious pilots never get the job done. Reckless ones don't live long enough. A good professional pilot will do the job each time he goes out and he will usually keep doing it until he is relieved on station by his son.

For the benefit of that 10 percent, the goal of the aviation safety program is simple: To provide the maximum combat readiness possible with the facilities we have.

We all must work to reach this goal and we hope to achieve it by:

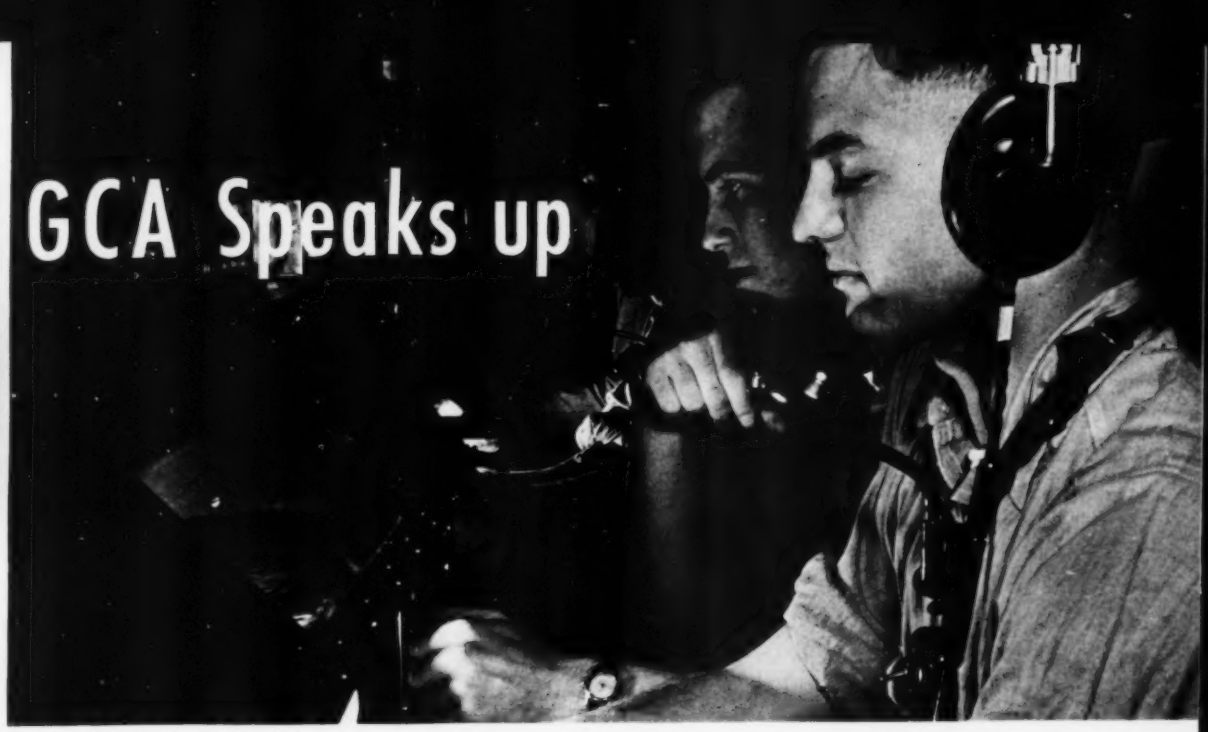
►Increased individual professional abilities through training, discussion and continuing education in our technical fields.

►Maximum realistic training yet conserving all personnel and hardware possible for the real thing by elimination of training losses.

►Reduction of human errors to the absolute minimum in order to increase efficiency.

►Increased knowledge of the requirements of ourselves and our equipment in order that we can exploit their maximum capabilities when necessary to the mission.—*1st MAW "Wing Tips"*

GCA Speaks up



The GCA controllers are always asking pilots for comments, so it seemed only fair to ask GCA for theirs. The question we asked them was this:

"What can aviators do to improve the efficiency of GCA and what are our most common faults?

Either the GCA folks were too polite or else too stunned by someone asking them for their comments but it all boiled down to five points. And, we must admit that they are good ones. How many are you guilty of?

1. *Please Acknowledge ALL GCA Transmissions.* You don't have to repeat every single word back, especially on successive practice runs but you *must* repeat back primary instructions like headings and altitudes as well as Rogering for all informational transmissions.

2. *Fly Headings and Altitudes Given by GCA.* If a pilot can't do this, he should schedule himself for some very intensive periods of basic instrument air work. If he can and doesn't, he is just sloppy and will get himself into serious trouble plus giving GCA controllers a handicap that nullifies their best work.

3. *Maintain Constant Lookout for Other Aircraft on VFR Practice Approaches.* This is only common sense—besides being the subject of numerous directives. Your cockpit was built to hold *you*—not you and someone else's aircraft. This is especially true for us single-place types. We should have a wingman. To make a good GCA pass, you have to be on the gages—to be on the gages, you have to keep your head in the cockpit. If you don't—you are doing a halfway job of both practicing and looking out. We very nearly (20 feet) lost an R4Q full of folks this way a few months ago when a swept-wing type was practicing solo GCA in VFR conditions.

4. *Notify GCA of Any Deviation from the GCA Pattern.* Due to other traffic, trouble in the cockpit, or many other reasons, you may have to deviate from the pattern. TELL GCA. They are the other half of the team who are helping you get down safely. If you keep them in the dark as to your reasons for not following their instructions they can't help you a bit. In an emergency, they can give you quite a bit of aid if they know the score. Let them help.

5. *Give GCA Constructive Comments After Each Approach.* This doesn't mean on touchdown. As most controllers will tell you, after you are slowed to taxi speed, everything taken care and you have a minute, call them and tell them how it could have been better. We are all human and we can improve ourselves by practice and the correction of mistakes called to our attention by constructive criticism from others who are qualified to comment. Who is better to comment on an approach than the trained pilots who just flew it? Help GCA to help you. ●

MONITOR

Weight Problem

Aircrewmen Physicals:—The major deficiencies that have been found are overweight and defective vision. Overweight personnel should be sent to AVMED. They have a diet system that has taken as much as 60 pounds off of one man. Squadrons should ensure that current flight lists be sent to AVMED and be kept up to date when men leave or arrive for new duty.—*NAS, Brunswick*

Those Expensive APUs

Each NC-5 power unit has a procurement cost of approximately $16,000 and an additional extremely high annual cost for maintenance. Concerted efforts to take proper care of this power unit for aircraft safety considerations cannot help but be reflected in reduced cost of its maintenance.—*Chesapeake Area*

Hi-Viz Buoys

The seadrome buoy evaluation project is proceeding as planned. Sufficient canvas skirts for all buoys have been procured, and the fluorescent paint has been applied to a total of six buoys. Pilot reports indicate that the visibility of the buoys is greatly improved and if the durability test now in progress is successful, all buoys will be painted. The paint was procured locally at a cost of $40 per gallon which compares favorably with U. S. prices.—*FAirWingSix*

Shorter Life

Statistics were presented on engine life of the new and Overhauled R-1820-86 engine. A recommendation for decreasing the engine life from 1000 hours by 30-40% is under study. The present rate of engine changes due to failures indicates that all the engines presently installed on aircraft at NAS Whiting will be changed within the next year due to metal in the sumps. Scheduling of the changes prior to malfunction will benefit all concerned.—*CNABaTra*

High Time

A look at instructor flight hours shows an average of about 50 hours per instructor/month. Considering leave, sick list, etc., this means that some of the instructors may be flying 100 hours a month. The Safety Officer commented that close watch of instructor utilization is necessary if accidents resulting from carelessness, judgment, or fatigue, are to be prevented. Also the quality of instruction is questionable during the 4th or 5th flight of the day. Instructor utilization will increase as good weather prevails during the coming month.—*CNABaTra*

EXCERPTS FROM SOME OF THE NAVY'S SAFETY COUNCILS THROUGHOUT THE WORLD, WHO PROVIDE LOCAL LEADERSHIP AND EMPHASIS TO THE NAVAL AVIATION SAFETY PROGRAM.

Identification at Night

Positive identification of aircraft in the traffic pattern during the hours of darkness has been a problem. A system of coded identification is being evaluated by the pilots and the MCAF tower personnel. An aircraft requesting entry into the landing pattern will be advised to "Flash Alpha" or an approximate letter by means of the coded flashing light system of the aircraft. This will enable the tower personnel to immediately identify the aircraft and facilitate better spacing in the traffic pattern when jets or faster traffic is also in the pattern. Results of this experiment will be submitted at the next meeting.—*FAirWingSix*

Quality Control

The quality control sections at the group level is paying dividends in the quality of maintenance throughout the wing. It is desired that all levels of maintenance have a quality control section. The personnel assigned to the section need not be assigned there as a primary job. In many units, quality control work is a secondary job within the various shops and sections of the squadron.—*3rd MAW, El Toro*

LSO Availability During CCA

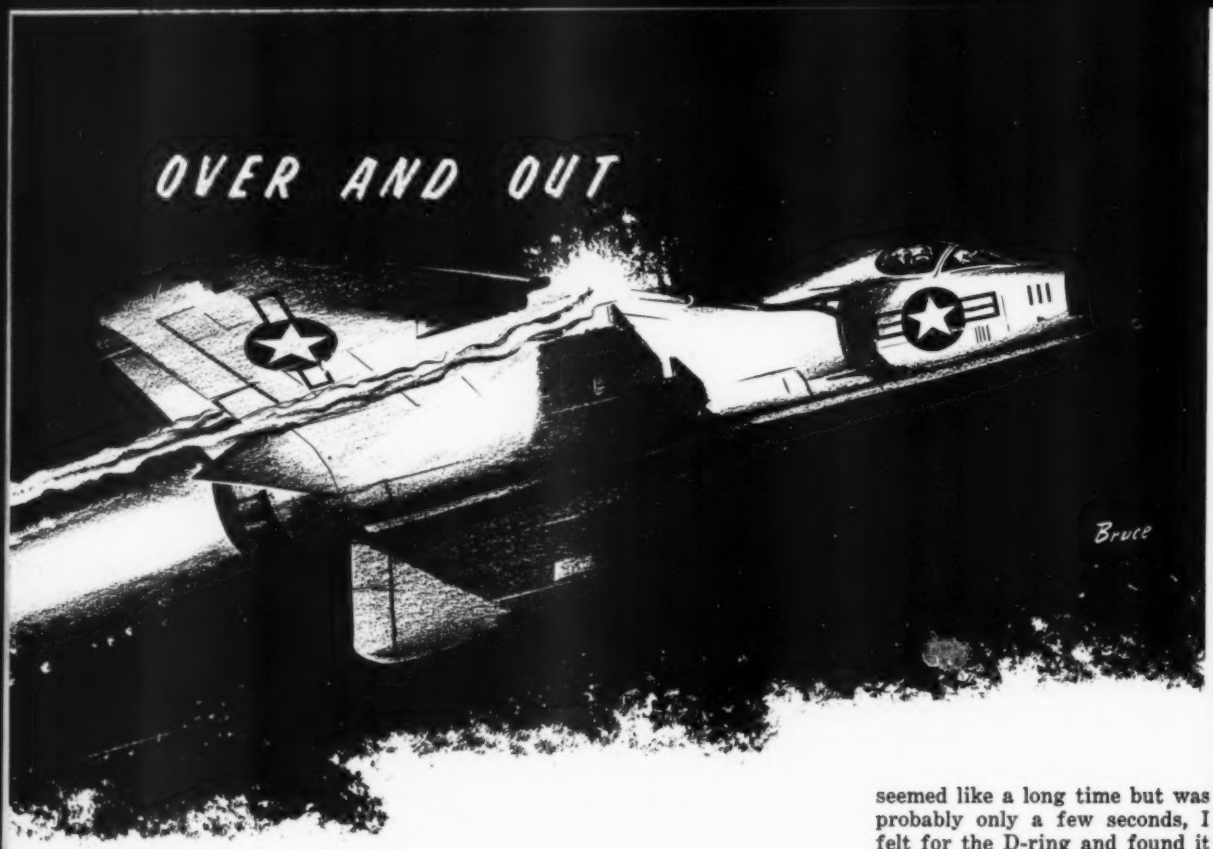
During practice CCA it has been noted that the LSOs have not been manning the platform. The explanation for this was that waveoffs were given long before the aircraft reached a groove position and therefore the LSO's presence was not considered necessary. In addition, simultaneous helicopter operations make the platform untenable. It is recommended that CCA be carried to the ramp when permissible and that an LSO be available. This is considered to be good procedure for practice.—*USS* VALLEY FORGE

CCA Communication Problem

Minor difficulties still exist. Specifically, the LSO and Primary Fly have not been cut in on the Final Controller circuit. Such information is vital to Primary Fly for obvious reasons and greatly assists the LSO in the transitional phase of the approach. A few seconds warning usually results in an earlier visual location of the aircraft. It is recommended that the CCA final controller insure that Primary Fly and the LSO are receiving final control transmissions on all CCA approaches.

Radio Discipline: Excessive radio chatter was found to be a deterrent factor during CCA recoveries. This problem is a squadron matter and action taken will be reviewed at the next meeting.—*USS* VALLEY FORGE

OVER AND OUT



ON A night carrier instrument approach, the pilot of an F4D-1 made a hard bolter landing which dislodged both wing tanks. He lit off the afterburner and the aircraft became airborne and climbed through the overcast with its right wing on fire.

At 2500 feet, the pilot pulled the face curtain. He heard the canopy go, felt a rush of air and assumed that he had been ejected. On letting go of the curtain, he found to his great surprise that he was still in the aircraft. Retrieving the face curtain, he jerked it several more times as hard as he could. Still the seat failed to fire.

"I thought about trying to get back to the ship but the orange glow on the wing was most discouraging," the pilot states. "Rolling out seemed my only acceptable alternative."

As the aircraft continued to climb, the pilot disconnected the D-500 quick-disconnect, opened the lap belt and threw the harness back out of the way. One last altimeter check read 13,500 feet; speed was estimated at 170 knots. He rolled firmly to the left and "came right out" of the cockpit. He lost his helmet in the process.

"I felt sure I would ricochet off something but I came out clean," he reports. "The afterburner roared right by my head.

"I was overcome almost immediately by a feeling of relief and almost sheer joy. For a few seconds I watched the plane as it descended vertically out of sight. Then I looked around and saw the lights of a city and thought how pretty they were. After enjoying my freefall for what seemed like a long time but was probably only a few seconds, I felt for the D-ring and found it easily. The thought passed through my mind that perhaps it wouldn't work either, but I pulled it anyway. I was curled up with my face down when the chute opened with a barely noticeable shock. I thought to myself that things seemed to be breaking a little better. The air was warm and the view magnificent.

"My next effort was to get back in the harness so I could free the raft. We had practiced this in the parachute loft on the ship not a month before and I slipped back in the harness with ease in practice. Survival school had taught us to kick feet high and push hard in back to get the chute down under the buttocks. I had never failed in practice to do this. Now I kicked high and pushed hard but I couldn't get back in the seat—I just couldn't. I was in good physical shape and felt strong, but the seat would go about half way and no further.

Realizing that my well-being depended to a large measure on the raft, I finally pushed the seat as far forward as I could and grabbed the cushion between my crotch with one hand and felt for the quick release. I had to grunt and pull but finally I reached the release. After I got my hand on it, it came right open.

"My kicking to get back in the seat had started me oscillating and this now reached alarming proportions. I was swinging what felt like 60 degrees above my vertical axis and also around so that I would go side-to-side for a few swings, then front-to-back for a few. I pulled on the opposite risers for a few swings, but it didn't seem to do any good. Each time I reached the zenith of my arc, the canopy would start to collapse and I could hear the panels flapping as the air spilled out. One crisis after another! Looking up made me dizzy so I just diverted my attention and ignored the swinging.

"I opened the chest buckle on the chute harness and just hung doing nothing. My mouth was dry—I couldn't generate any salivary action at all.

"I checked all my survival gear: knife, gun, mae west. All were in good shape. Then I took off my gloves and zipped them into my leg pocket since I felt they would be a definite hindrance in the water. I could see the clouds below me and I floated down for a long time. Finally I went into the clouds; naturally they were cold and damp. However, the violent oscillations which had terrorized me all the way down seemed to dampen a little.

"I popped out of the bottom of the cloud and saw the carrier and destroyers and lots of planes milling around. I held the leg strap quick-release buckles in each hand and actually moved them enough to assure myself that they would work. For the first time, I felt slightly faint so I popped both sides of the mae west. I put my hands back on the leg buckles and waited. I saw white caps everywhere on the water and when I heard the waves breaking, I knew I was almost there.

"I hit the water not uncomfortably hard and released the leg buckles. The chute tore off me forcing my arms up over my head as it pulled off. I felt the raft lanyard jerk and the raft packet was floating free in the water. I pulled it in and felt my way inside to the bottle toggle which I actuated with celerity since I had thoughts of unfriendly sharks nibbling away on my posterior. The bottle hissed a little and the snaps came open, but the raft didn't blow up. I unfolded the raft in the water and fooled around for a few minutes trying to find the oral inflation tube. I fumbled on it and screwed back the lock sleeve and started blowing. I blew and blew and nothing much seemed to happen but the raft finally took shape. When it was firm enough to get in, I did so with speed and finished my inflating from the relative security of my craft."

Once settled in his life raft, the pilot fired tracers from his .38 caliber pistol and was picked up uninjured by a whaleboat from a plane guard destroyer.

"Just about everything conceivable had happened to this pilot yet he safely survived the ordeal," an aviation safety officer commented, relaying this case to his squadron. "Each pilot must have trust and confidence in his aircraft emergency systems and survival equipment and, in addition, he must know thoroughly how to use it. In case of a malfunction or failure he must have an alternate plan prepared to cope with the new situation. DON'T GIVE UP." ●

Standardization

"THIS is a good outfit, but *I* have a bad time trying to fly the plane way each instructor wants it flown. Flight training is not standardized in some respects. It seems that the instructors follow 'The Book' as long as it agrees with their ideas on flying the plane. One day I learned how to fly the plane as prescribed by a particular instructor. Next day I try to follow the instruction I received previously, but because I have a different instructor I have to learn a different system. I will be glad when I finish training then I can fly the plane the way we used to fly in my old outfit and the way I think it should be flown.

"Well, now *I* have a different problem. I have never been in this type of transport aircraft. I am learning how to fly airline techniques as well as how to fly this transport. I am *really* fouled up by all the different ideas on flying the aircraft. If somebody would give me a firm set of operating instructions, both as to plane handling and transport flying technique, I could sink my teeth in the transition and make some progress. The way this outfit flies I never know from one day to the next how they want me to get the thing off the deck.

"My problem is like the one you fellows have, except that it's in advanced stages. I managed to get through my training and check for *2nd* pilot because I think a few of the instructors were making an effort toward using standard techniques. Now

Whether your present duty is in tailhook or transport types, a good standardization program solves many training and safety problems.

that I am putting in more copilot time on the line, I find that very few of the PCs follow a standard routine in line flying. They all have good reasons for what they do, and why they don't agree with another pilot's techniques. Trouble is that I don't know whose line flying instructions to follow. I have to admit that all the PCs I have flown with are good transport pilots, and they really go out of their way to give enroute instructions. I have learned something from every one of the PCs to date. Now if they would just get standardized, there would be no strain getting checked out. It's sure rough on us replacements, trying to outguess everybody who flys transports.

This type of conversation is too often heard at places where copilots of one or more crews are found discussing their flight problems here. People who are old transport hands, and people who are in operations for the first time make the same remarks concerning transition training and line flying.

You know that this is an unhealthy operations condition. If *you* were the operations officer, you would correct this situation in a hurry. You would set forth the flight operations techniques and procedures, and see that they were carried out. It would be done, in all sincerity, in the manner you thought best for operations. You have had a lot of experience and you have seen your method work. Your job would be easy, if it were not for the fact that *every* PC is a potential operations officer in his own right, and probably, has as much experience as you. He has also seen his flight system work, and it is different from yours. What is the solution?

Answer: It would be a publication of standardized flight operating instructions, based on the best operating procedures submitted by all the experienced PCs. Naturally, everyone's ideas cannot be used, or we would be right back where we started, dashing off madly in all directions at once. Therefore a board of the most experienced pilots must select from all submitted suggestions those that best suit our operational requirements, both for aircraft and routes flown.

If we all remember the following simple statements, there should be no more standardization difficulties:

a. Your idea of operating and line flying may be better than those set forth in the SOP. Some good operating instructions may be included, some of those included may not be the best, but those prescribed *are* safe, and they *are* the standard procedures. The organization for which we are working is paying us to fly *their way*. It is our job to fly as directed, so long as it is consistent with safety. It is safe, and similar procedures are being followed by airlines. *You* are asked to contribute your highly experienced and specialized ability in operating a standardized, training and line flying organization. That means everything is done "by the book." If we have better techniques in mind, then submit them for consideration and possible addition to the standardized program. We *do not* put them into unauthorized practice.

b. We should review takeoff, landing, GCA and other flying techniques that are prescribed. Where there is a question as to the interpretation of the manual, bring your questions to Operations for clarification.

It is realized that in intelligent people differences of opinion will be found. You are mature, intelligent, and responsible naval officers. A request for your cooperation in this matter should be all that is necessary.

Will you help us get standardized?

THE LONGEST DAYBREAK

"...should have been picked up in 30 minutes, but it didn't work that way..."

ON A two-plane night air intercept training flight out of NAS North Island, an F4D-1 pilot lost power at 23,000′, then flamed out. Two relight attempts failed. He ejected at 6000′.

The time was 1831. Sea state was moderate, wind calm. Sea and air temperature were 60° F. Although the weather was clear with visibility 10 miles, the night was dark.

Working from the ejection position radioed by the pilot's wingman, a large number of aircraft and surface vessels made an intensive and prolonged search of the area throughout the night. In spite of this, the pilot was not located until approximately 0730 the following morning—*13 hours after he ejected.* Three factors combined to hinder the search: the dark night . . . the sea state . . . and the survivor's problems with signaling devices.

The pilot describes his ejection, parachute descent and water entry as uneventful.

"I didn't have any trouble seating myself in the parachute harness compared to the time I bailed out of an F3D," he states. "This time the descent seemed to be rather slow. I had plenty of time to get squared away and collect my wits. Without any difficulty, I reached down and pulled the lanyard from the pararaft container, brought it around the outside of my right leg and clipped it to my mae west. About 200′ above the water while I was still sitting back in the seat I unfastened my chest straps and leg straps. I thought at first of dropping into the water but I figured I wouldn't take the chance because you can't judge distance at night. The water may look like it's 10′ below you and really be 50′ or 100′ below.

"As soon as I touched the surface, I just relaxed. I came out of the harness and went down into the water. All this time, my bailout bottle was still working. I went under water with my mask still on—I didn't get any salt water in the mask.

"I went down about 10 to 15′ under water," the

survivor continues. "While I was under, I pulled the toggles on my mae west CO_2 cylinders. The vest inflated without difficulty.

"I came to the surface within the shroudlines and under the parachute canopy. I used my hands and kept pulling the canopy towards me until I broke out from underneath it. Then I saw the shroudlines were fairly well strapped around me. Without worrying about it too much, I inflated my life raft.

"Contrary to Navy doctrine I carried my sheath knife on the inflation tube of my mae west."

- *For every case in which a knife worn on the oral inflation tube was retained there are many cases in which it was lost. The oral inflation tube of the life vest is one of the worst places a pilot or aircrewman can carry his survival sheath knife for two reasons: 1. The oral inflation tube is not secured at its valve end but merely passed through a cloth tab to hold it flat against the vest. When the tube comes out of the tab in an ejection or free bailout, the knife and sheath are lost. 2. The knife and sheath can hang up or be torn off on exit. A better place for the survival sheath knife is a canvas pocket sewed on the flight suit or cemented to the exposure suit by the squadron parachute rigger.*

"I cut the parachute shroudlines away," the survivor recalls. "I had to take my gloves off to do it . . . At this time I still had some shroudlines attached to me in some fashion . . . I cut the shroudlines off and let the parachute wash away without saving it. The parachute would have been one of the best things I could have had both for body protection and for attracting attention if a spotlight had been put on me. I could have wrapped up in it and stayed a lot warmer.

"After getting into the raft, I noticed my wingman was still orbiting. I then used one of my distress signals on my mae west . . . With four flares and nothing else, those flares should be treated as the most priceless things in the world, especially if you don't have a flashlight. In my case I used them rather rapidly, though not one right after another.

"I had a two-cell standard Navy flashlight with a red lens and a white lens tucked away in the end of it. While descending in the parachute I used the flashlight to indicate to my wingman that I was in the chute so I know I had the flashlight after ejection."

- *Signalling during parachute descent over water is risky business because it uses valuable time better spent in preparing to enter the water. See "Pocket That Rocket," March, 1959* APPROACH.

"After getting into the raft I reached for my flashlight again. It wasn't there. The lanyard was still around my neck but the clip that goes to the flashlight had sprung and the flashlight had been lost."

- *Pilots who wear flashlights on lanyards around their necks take a chance on the cord hanging up on something during ejection and possibly injuring or strangling them.*

"After I fired the first flare, I took my one-cell flashlight from my mae west and tried to turn it

on but it wouldn't work. I remembered turning it on about four days before the accident and it had worked then."

- *This pilot will no doubt check* each piece *of his survival equipment* before each flight *from now on.*

"I did not have a .38 revolver with tracers which would have been the answer. That would have given me quite a few more items to signal with. I believe pilots and crewmembers both should carry pistols at night."

- *For stock numbers and requisitioning information on .38's and tracers, see "Notes From Your Flight Surgeon," June, 1959* APPROACH.

"After the first aircraft dropped flares, a helicopter that had lights showed up. He dropped a smoke marker about half a mile away from me which I understand was to mark the spot which the Coast Guard UF reported they had seen me, but they were off a half-mile. From that time on, numerous aircraft and helicopters came very close. Searchlights from S2Fs and lights from what I assumed were the Coast Guard helicopters came as close as 25 feet at one time.

"It was one of the biggest demonstrations of air power that I have seen in a long time and I had a front row seat. There were all types of patterns being used in dropping flares—boxing, in-line, . . .

"Several times an S2F would be coming straight at me, sweeping with his searchlight and it seemed like all the pilot would have had to do was continue but he would shut his light off and pass right over me. The helicopter lights would only shine in the direction the pilot was flying. The Coast Guard commander told me later that they should have had me out of the water within 30 minutes but it just didn't work out that way."

- *Unfortunately, it is much easier for a man in the water to see a search aircraft in the sky than it is for the pilot and crew in the search aircraft to spot the man in the water. It is for this reason that signaling devices make the difference between life and death in a survival situation. The ocean is big. The survivor is small. The largest and most thorough air-sea rescue search can miss a survivor if he does not have any signaling device to attract the rescuers' attention.*

"Everything in the pararaft survival kit except the sponge was tied in and worked OK. The sponge wasn't tied so I lost it when I opened the kit. The sponge would have been very handy. Using my helmet as a bailer I got most of the water out of the raft but I couldn't get it all out. I sat in 2" of water all night.

"I had some trouble getting the poncho open—the parachute riggers had apparently wrapped some tape around it. If it hadn't been for the poncho, (which I held so the red was on the outside) I would have been a lot more miserable than I was.

"I attempted to attract attention by waving my

arms whenever an aircraft came close. I would get out of the complete covering so I could get my arms free in case they put a light on me and then I would start waving. I did this often without any results and every time I got unbundled I got cold again. Finally, I decided that if they put a light on me they would see me without too much waving.

"Several ships came close enough for me to hear voices. I blew my whistle and blew it and blew it but there was no indication that it was heard. When the search began moving farther and farther away from me, I resolved to wait for the sun in the morning and hoped that the weather wouldn't be too bad. I bedded down for the night but I didn't sleep any. I checked my watch every 10 to 15 minutes throughout the night. The sea state was anywhere from moderate to rough. Swells were perhaps 8 to 20', but I never felt that the raft was about to tip over and I never got seasick. I kept the sea anchor out all the time.

"My feet stayed warm in my USAF flight boots which come up fairly high on my legs. My side just behind my arms got the coldest—from the slits in the poncho, I believe.

"A couple of times I felt that I was in a school of whales or porpoises. I could hear them around me and it wasn't the best feeling in the world. I thought a little about the possibility of one of them tipping my raft over.

"I waited for the sun to come up. From the first indication of dawn until the sun actually started coming up over the horizon was the longest daybreak I've ever spent in my life.

"As it got light in the east, I got my mirror out and prepared to use it. One or two aircraft and perhaps four ships were searching at daybreak. Right after the sun came up, I saw a Navy vessel towing a target pass about 10 miles southeast of me. I attempted to put the mirror on the ship but the height of the waves made it impossible. Soon afterwards, a sub tender came out of the east and passed about 2 to 3 miles from me. I kept the mirror reflection on him as constantly as possible from the time I first saw him until he had passed by but I had no luck in getting attention from the bridge.

"Soon afterwards, two S2Fs headed straight toward me from the east. While they were approaching head on at about five miles distance, I threw out a package of dye marker and began shining my mirror at the two cockpits. The S2Fs passed right over me, one behind the other, and never saw me.

"Shortly after that, I observed 7 or 8 helicopters coming out from the east in a line abreast formation, and I started working the mirror on them. With the sea anchor set to keep me facing the east, I held the mirror on each of the helicopters alternately for about 10 seconds at the time. Then I saw one of them break out of the formation and head straight for me. When he got within a mile of me I put out some more dye marker. He came over me and hovered.

"I was reluctant to re-enter the water but I knew I had to. I reinflated my life vest by the oral inflation tube. (By this time the CO_2 had diffused.) I grabbed my knife and helmet and jumped back into the water.

"I didn't have too much trouble getting into the helicopter rescue sling except that the first time the sling came unfastened. I waved to the crewmen who then pulled it back up and re-hooked it. He lowered it again and I got into it and was hoisted up. When I got into the helicopter I was really cold. The crewman gave me a couple of blankets to wrap up in."

The pilot was taken by helicopter back to North Island. On examination at the base dispensary he was found to be in good condition although suffering from moderate exposure.

"The manner in which the pilot executed his planned ejection and his overall use of survival equipment are considered excellent," the AAR states. "However, he realized his mistake in permitting his parachute to drift away. In retrospect, it is felt that he might have been rescued much sooner had he saved one or two of his flares until search units got into closer range. His inability to attract attention was further aggravated by the failure of the one-cell flashlight on his life vest . . .

"Among the factors which influenced the difficulty in locating the pilot," the AAR continues, "were darkness, moderate sea state and the pilot's lack of night signaling devices. The difficulty of assembling the pararaft radar reflector is widely recognized. If the raft had been equipped with a hand radio in place of the reflector, locating the pilot would have been greatly facilitated."

- *BACSEB 32-57 of 15 October 1957 states that the corner reflector shall be replaced with AN/PRC-17 Transmitter Receiver in PK-2, MK-4 and MK-7 life rafts when available. It recommends that PK-2s in actual service have priority on all installations, subject to the discretion of the area commander.*

"It is the opinion of the board," the AAR concludes, "that the effort put forth by the search and rescue team was well-coordinated and executed. The long delay in recovering the pilot was disappointing. However, it must be pointed out that rescue efforts were greatly hampered by darkness, sea state and the pilot's lack of signaling devices." ●

Overheard at the Coffee Urn

". . . Since I was down that low anyway, I decided to bend her around in that little cove and see if any ducks had showed up yet this season but didn't tell my wingman what I had in mind—I was leading, you know. So this knucklehead thinks I am in trouble and going to pancake on the beach and starts to yell "MAYDAY" and turns his IFF to emergency and alerts everyone in WestPac. Had a lot of explaining to do when we got back in—I'll never fly with that stupid clod again . . ."

Parachute shroudlines can clutch at you in the water like the tentacles of an octopus. If you wear an integrated torso harness suit this article is for you . . .

GOOD RIDDANCE!

There are two things you must do for complete separation of the parachute canopy from the harness if you eject wearing the integrated torso harness suit:

1. Disengage the manual parachute D-ring from its pocket.

2. Release the upper two rocket jet fittings on contact with land or water.

A number of reports received recently by the Naval Aviation Safety Center indicate that ejectees wearing integrated torso harnesses are failing to pull the manual D-ring when their parachutes open automatically.

If you manually activate your parachute after ejection you have, of course, no problem. However, *if your parachute opens automatically, you still have to pull the D-ring during the parachute descent* in order to be able to separate the parachute canopy completely from the harness when you later release the rocket jet fittings.

If you fail to pull the D-ring in preparation for land contact, the wind can tow you over rough terrain. If you fail to pull the D-ring in preparation for water entry, you can become entangled in the parachute shroudlines with very serious consequences.

Fortunately, the pilots in the following cases were rescued successfully. The results could have easily been different:

Case 1: A pilot whose parachute opened automatically after he ejected from an F8U-1 over water forgot that he had to pull the parachute manual D-ring as well as release the rocket jet fittings to completely separate the parachute canopy from the harness. After he entered the water and released the rocket jet fittings, his legs and feet became tangled with the shroudlines. Realizing what the trouble was, he looked for the parachute D-ring. However, when he had released the rocket jet fittings, the risers with the D-ring attached had pulled away from him. He finally found the D-ring in the tangle of chute and lines, pulled it and managed to get loose from the parachute lines and canopy. As he freed himself and swam clear of the parachute, it drifted away. He then was rescued without further incident by a helicopter overhead.

Case 2: During parachute descent over a river, a pilot who had ejected from an A4D-1 forgot to pull the parachute manual D-ring after his chute deployed automatically. As he entered the water, he went under so fast and so deep that he did not have time to actuate the rocket jet fittings as he had anticipated. When he surfaced, he released the rocket jet fittings but was by then so badly tangled in the shroudlines that he could not get free of the parachute. He did not have a sheath knife. (The pilot later suggested that helicopters carry a knife on a line to be lowered to any survivor who might need one.)

In spite of the tangled lines, the pilot somehow managed to inflate his pararaft and climb aboard. When a HUP-2 overhead dropped a rescue sling to him, the survivor made the mistake of entering the sling with his parachute still attached. The helicopter was unable to raise the survivor with the additional weight of his waterlogged parachute. At this point, a 40-foot crash boat from the station arrived on the scene and took over the rescue. The boat crew had to cut the shroudlines away from the pilot when they pulled him aboard.

REMEMBER: *When you eject wearing an integrated torso harness suit and your parachute opens automatically, you must still pull the parachute manual D-ring during descent for complete separation from the parachute after descent.* If you don't you're in trouble. ●

notes from your flight surgeon

Fit to Fly

ON AN extremely dark night, the pilot of an FJ-4B attempted a running rendezvous at cruising altitude. Misjudging his distance from and rate of closure on the lead aircraft, he collided with it and went into an uncontrollable rapid spin. He ejected successfully at 16,000'. The lead aircraft returned to base and made an uneventful landing.

Fatigue was an important contributing factor in the accident. The pilot had been on duty 17 hours. This was his fourth hop of the day.

"The physical state of fatigue deprives the pilot of his peak potential of alertness and reactions which are essential for flight safety," the reporting flight surgeon states. "Of equal importance is the proper psychological preparedness for flight. Due to fatigue (in this case) the desire to fly was lacking."

An endorser of the AAR adds some pertinent comments: "The commanding officer, the flight surgeon and the individual pilot must insure that a pilot does not fly when he is physically or psychologically unprepared. First, the individual pilot has a responsibility to himself and for the safety of others to make this fact known . . . (and when necessary have himself grounded). Second, the flight surgeon has a responsibility to advise the commanding officer when the physical capabilities of a pilot are being exceeded. And last, the commanding officer must be cognizant of the flight schedule to ensure that unusual demands are not placed on the pilot. When in doubt, the commanding officer must temporarily ground individuals until they have had adequate rest and are physically and psychologically fit for flight."

Ditching

WHEN its fuel state prevented an AD5W from reaching shore after being diverted from the carrier, the aircraft ditched alongside a guided missile ship 132 miles off the coast in a very rough sea. The three occupants escaped from the aircraft in about 20 seconds. Seventy seconds later the plane sank from sight.

Both the pilot and copilot took their chute packs with them and tried to remove their pararafts. However, they abandoned the attempt because of difficulty in keeping their heads above water. With their life vests inflated, the three survivors began to swim toward the ship some 200 yards upwind. They gave up after a brief, tiring effort. The ship was brought into position and, drifting downwind, made a successful pick up about 19 minutes after the ditching.

When the men were examined by a doctor aboard ship, the only finding was that the pilot was markedly fatigued. The pilot attributed this to flying on instruments for five hours and trying to swim to the ship.

None of the survivors was wearing an exposure suit. Water temperature at the ship at the time of the launch had not made this mandatory.

Among the flight surgeon's recommendations are:

- Exposure suits should be worn when temperatures are marginal or when weather is such that alternate landing sites require flying over water whose temperatures normally require wearing of exposure suits.
- When two or more persons are involved in the same survival situation, they should strive to stay together for mutual aid.
- Unnecessary fatiguing activity (such as swimming toward the rescue ship in rough seas) should be avoided because of the danger of the survivor's becoming too fatigued and weak to assist the rescuer.

". . Or You Don't Come Back"

A STUDENT pilot in an F9F–5 flying a routine gunnery hop struck the tow target and subsequently made a successful ejection and entry into the water. He was picked

up uninjured 40 minutes later by helicopter. Here is an excerpt from his narrative in the AAR:

"I would like to emphasize the absolute necessity of knowing survival procedures. In a survival situation such as mine, due to shock, slight panic or fear at times and the necessity of immediate correct decisions, one reacts, one does not think. You must *know* what to do next because you are often *incapable* of logically reasoning out the next proper move. You either know what to do next, or you don't come back."

Prepared

THIS particular S2F crewman has evolved in his own mind a plan of action covering most survival situations. He states that prior to each flight he goes over in his mind what he will do should this or that type emergency develop. When placed in this ditching situation, he already knew what he was going to do and this helped him to do it calmly yet quickly. His foresight in planning for an emergency saved his life.—*Flight Surgeon in MOR*

A Dangerous Place

THE flight deck is a dangerous place. Men allowed to work past their limit of effective endurance jeopardize their safety and the safety of others.

The 19-year-old plane handler had been up for 21 hours and at flight quarters 16½ hours with only an occasional break for chow or a cigarette when the accident happened. He was working as the starboard chock man for an F3H being brought up from the hangar deck to the flight deck on the No. 2 elevator. Instructed to pull and walk the chock as the tractor towed the aircraft, he walked in front of the wing and inboard of the wheel rather than outboard of the wing and wheel. As the aircraft accelerated, he turned around, looked at it, crouched and ran forward as the wing caught up with him. The starboard wheel ran over his right ankle causing a compound fracture.

The injured man later stated that he was tired, that it had been an effort to even pull the chock and that his mind had been working slowly at the time of the accident.

The human cannot maintain peak efficiency and effectiveness without sleep, the reporting flight surgeon states. He recommends that when operations are to extend so that the men are awake for 18 hours or more, crews should be rotated to afford them the chance to sleep.

Moonshine

ON A navigation hike, a student in the FAETUPac Survival Training School became lost and was separated from the rest of his group. By the time it was discovered at the rendezvous point that he was missing, it was growing dark. A group of instructors started back through the course in search of him. Far off in the brush, they noticed what appeared to be a dimly blinking flashlight. After walking about three miles, they came upon the student. He was using his signal mirror and the light of the moon to attract attention.

None of the instructors had ever considered this use for the mirror, one of the training officers reports. The successful use of the mirror was especially interesting to them, he says, because the moon was only in its first quarter at that time and the distance was so great.

Another item on the signal mirror comes from an endorsement on an F3H-2 report concerning an accident in which the pilot ejected and parachuted down in the desert. The endorser points out that the mirror is standard equipment in all squadron pararaft kits and was included in this pilot's. However, in this instance, the kit came to rest 15 feet from the pilot who was immobilized because of injuries.

"Separation of an immobile pilot from the kit may render it useless," the endorser states. "For this reason, it is strongly recommended that the mirror be carried on the pilot's person."

Helmet Protects

THE engine of an AD-6 caught fire while the pilot, a NavCad, was in the pattern for his 14th practice field carrier landing. Smoke filled the cockpit. He could not see his instruments or see forward out of the aircraft. He made an approach and landing by looking out the port side of the cockpit and following the directions of the LSO. A firefighting crew which paralleled the aircraft's final rollout, was unable to put the flames out before the main fuel cells were afire. The fire resulted in strike damage to the aircraft.

"The aircraft rolled down the runway with the smoke and flames increasing," the pilot states. "I released my shoulder straps and safety belt, gave a yank on my radio cords and scrambled out on to the wing. The aircraft was still rolling at approximately 15 to 20 knots when I fell off the wing and landed on my parachute, then fell back on my hardhat and right elbow."

Although the pilot's H-4 helmet cracked when he struck the cement runway, it protected him from injury.

KNOWMANSHIP
makes the mechanic a
PROFESSIONAL PARTNER

The Maintenance Man . . . a Professional Partner

MANY articles have been published about the successful feats of scientists and engineers, then technicians and managers, specialists and contractors, who develop, produce and operate weapons systems for the defense of this country.

Less publicized, though equally important in these accomplishments, is the contribution of the mechanic.

A weapons system no matter how advanced is somewhat like the proverbial sweater—you can only get out of it what you put in. Usually, back of all such successful devices is the hard working maintenance crew who are often forgotten in the enthusiasm for the results they obtain. It is through the usual high quality maintenance the mechanic performs that he has come to be likened to the mechanical devices he maintains. But he's no machine.

All weapon systems, including the supporting equipment at intermittent periods of development and use, must be disassembled, overhauled, adjusted, and reassembled, or more commonly referred to as maintained, to perform in a predetermined manner. What a difference it makes in the over-all success of the mission when the mechanic has the necessary experience and capabilities to fit into the team picture smoothly and to carry out his responsibilities efficiently!

The mechanic who performs this feat is indispensable. "Knowmanship" is a unique word that aptly describes the qualifications of this individual. Knowmanship stands for the critical combination of technical knowledge, practical experience and talented craftsmanship.

It has been advocated that craftsmanship and master-apprentice learning which are recognized assets of the mechanic are not contributing factors in the visualization and building of new defense articles.

Contrary to this belief, the maintenance man is human and is subject to the same emotions, faults and desires as his learned associates. The mechanic possesses the mental flexibility to easily adapt to rapid design changes. Sometimes, bearing the titles of grease-monkey, wrench-turner or knuckle-buster, he is often instrumental in the improvement of our combat vehicles. He also breeds the seed that leads to the breakthrough in experimental efforts. In short, the mechanic is a professional partner.

—ARDC "Flying Safety Newsletter"

"For years we have blamed maintenance for the lack of aircraft availability. Recently deployed squadron commanders, to a man, say the caliber of maintenance in the fleet is better than it has ever been — It's time we got off the maintenance man's back." — *Maintenance and Support Committee, Third Navy-Industry Conference on Aeronautical Reliability.*

TECHNICAL TRAPS

Today's aircraft have brought about a host of new maintenance hazards and, as a result, new SOP. People who neglect these are apt to be trapped. Here are a few reasons why . . .

THE problem faced by maintenance personnel in educating for safety was examined. The question was asked whether any of those present really had any idea how many Technical Orders, Handbook Maintenance Instructions and other official publications must be complied with to make our modern aircraft safe to fly? And further, how safe relatively is it for our maintenance personnel?

Compared with earlier aircraft wherein the propeller was the potential source of injury, today we can list the following:

a. GTC 85 jet starter unit

(1) Whipping can injure personnel and damage aircraft. (See photo, this page.)

(2) Heat can injure personnel, damage aircraft and start a fire.

b. Aircraft Tires

(1) Tire carries 240-260 psi. Improper use of valve cores, hose extensions and disassembly procedures can cause serious injury. All air must be out of the tire before disassembly. A man has actually been decapitated by improper maintenance procedures.

c. Cockpit Area

(1) Ground ejections are still occurring in spite of all the technical and safety publications on the subject. "Couldn't an accident such as this be the lack of good communication?"

d. Liquid Oxygen

(1) In filling the Liquid Oxygen system in an aircraft, you plug it in then wait until Liquid Oxygen is coming out the fill ventline. Liquid Oxygen at —275°F is being dispensed into the air. The safety problem here is not only the man filling the system but all other personnel in the area. The main thing is this: "Don't become an ice cube."

e. Jet Engines

(1) At full power approximately 415,000 lbs/hr of air flows thru a jet engine. At the duct inlet the wind velocities are approximately 90 kts at idle and 200 kts at military power. Velocities up in the duct get as high as 400-600 kts. Any partial blocking of the inlet duct causes a pressure drop across the compressor with a resultant increase in fuel in order to hold the engine at the RPM called for. Many of us are accustomed to a plenum chamber configuration whereby two inlet ducts are used. This way one duct can supply air if the other is blocked off. But in aircraft like the FJ, where there is a single inlet, the problem of partial blocking is considerably more serious. Have you ever seen your line man hurriedly cover his head to keep from being pelted by rocks? A good motto is "Don't shot peen your line man."

f. Wheel

(1) An "insignificant" brake fire can cause fatalities if the wheel fails.

The safety strap on the end of the GTC-85 hose assembly will prevent whipping, possible injury to personnel and damage to the aircraft should it become uncoupled during operation of the pneumatic starter say A4D operators VMA-225.

(2) Education and judicious use of the fire fighting equipment is essential to preclude getting a high temperature differential thereby exploding the wheel.

g. Control Surfaces

(1) Power-boosted controls are capable of operating at supersonic speeds. The power available for its operation is obviously great and the actuating times are much faster than in previous models. Serious injury to personnel has resulted from their improper use.

h. Tail Pipe Area

(1) Some of the hazards here are:

(a) High temperatures
(b) Tail hook accidents
(c) High exhaust velocities
(d) Damage to one's hearing

i. Control Forces

(1) In our modern aircraft, a 40 lb stick force can result in several tons of force at the control surfaces.

These are only a few of the hazards of our modern aircraft when compared to our older and more simple configurations. One of our most effective ways of combating our problems of costly maintenance, injury and death to our personnel and unwarranted accidents is to have a system of "Two-Way Communication" to further the education of all concerned.

Maintenance personnel through education can maintain our aircraft to keep them ready to perform their missions safely. Conversely, it behooves flight personnel to be thoroughly familiar with their aircraft so that they can accurately report all maintenance discrepancies.

Let's look at the AD aircraft for a moment. Our two primary problems are:

a. Power Plant reliability
b. Stall-spin accidents

Meticulous attention must be given to the care and maintenance of the power plant to insure reliability. All applicable Technical Orders, Technical Publications, etc. must be complied with. Examples are those dealing with:

- Operating Limitations
- Pre-oiling
- Proper Preservation
- Proper Progressive Maintenance
- Cold Weather Operations

Furthermore, the engine communicates in its "own language" through

- Engine vibration or rough running
- Excessive or uncontrollable rise in oil temperature
- Sudden or uncontrollable loss of power
- Sudden drop in oil pressure
- Sudden or uncontrollable rise in engine head temperature
- Oil leaks
- Sudden drop in manifold pressure

Our problem is that the *operator* does *not understand the language.* Here again, the Technical Orders and the official publications are our interpreter.

FOD CAN BE PREVENTED!

Foreign object damage to gas turbine engines continues to be an extremely costly problem regardless of past actions to reduce its occurrence. Previous investigations disclosed that primary causes were due to careless maintenance practices, inadequate operational procedures, unsatisfactory airfield conditions, and design characteristics of engines and aircraft.

It is imperative that immediate and positive action be taken to reduce those foreign object damage incidents caused by careless maintenance practices which are attributed primarily to mechanics dropping or leaving tools, nuts, bolts, and other items in engine section or engine intake ducts. Additional emphasis must also be placed on cleanliness of engine operating areas including ramps, runways, test cells, etc.

Perhaps it is felt the foreign object damage prevention SOPs are complete at your activity. One base thought it was doing everything possible to prevent foreign object damage. However a survey of the views of pilots and maintenance personnel revealed that SOPs were lacking on several points. Rewriting the SOPs and adhering to them reduced foreign object damage by 63 percent.

Flight line and maintenance personnel often fail to properly account for and dispose of nuts, bolts, washers, lockwire, clips, etc. during maintenance work on an aircraft and/or engine components.

Note: Never fail to account for each nut, bolt, washer, etc. used or replaced during any aircraft or engine maintenance.

Too often the lack of an inventory of hand tools used in maintenance results in foreign object compressor damage. Never make the assumption that Kilroy borrowed a tool, and, therefore, that you know where it is. After completing a job or at the end of a working period, inventory all tools and make certain of their location.

Note: Never start an engine before accounting for every tool used in the vicinity. Also, thoroughly inspect the inlet duct area for any loose objects.

Personal property such as identification badges, pens, pencils, and coins have been drawn from clothing, or dropped in the vicinity of the aircraft intake, causing compressor damage upon starting the engines.

Many flight line personnel do not fully comprehend how dangerous an aircraft gas turbine is to themselves. Since unwary persons can and have been drawn into engines, it is important that proper precautions be taken. This can be a continuing program of reviewing applicable instructions and often repeated instructions on personal safety when working on or around jet engines.

Large quantities of foreign objects are carried into engine operating areas by vehicles and personnel in transit across engine operational areas. These areas will require constant policing to keep them clear of foreign objects.

Engines being transported on dollies or trucks are known to pick up metal foreign objects because of inadequate covering of inlet sections.

Note: Never neglect the possibility of foreign objects in the inlet of a replacement engine. Thorough inspection of this area is mandatory.

Always place an adequate number of receptacles for disposal of lockwire, unusable nuts and bolts, foreign objects, . . . in proper areas for disposal and as a reminder of the necessity for continual preventive practices.

Foreign object damage caused by stones and gravel can be a direct result of aircraft ground maneuvering. The damage is usually caused by maneuvering in the following manner: close proximity taxiing, echelon takeoffs, taxiing across the intake or exhaust of another aircraft, propeller wash, and bomber engines hanging over the edges of the runway.

Mechanical or rotating sweepers should be utilized. Sweeping procedures should incorporate an overlapping technique. Whenever possible sweeping should be done with the wind. Expansion cracks cannot be cleaned with a mechanical sweeper. Therefore, a follow up must be made with hand sweeping.

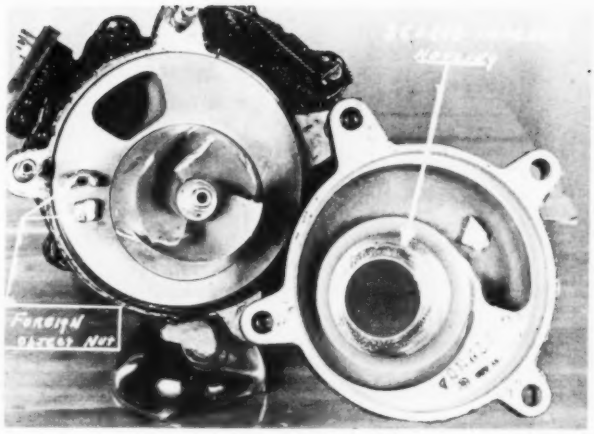
When moving aircraft to another location, tugs should be used in lieu of taxiing, to prevent foreign object damage.

—From GE "Jet Service News"

LOOSE NUT—With the power stabilized at 98% rpm, the FJ-3's engine flamed out. The aircraft was in a climbing 60-degree left bank at 27,000 ft. The pilot selected "Emergency Ignition" but did not relight. Air start procedures in "Manual" fuel control were also unsuccessful. With no indicated fuel flow, the pilot landed at an Air Force Base.

A ½ inch "Flex Loc" steel cadmium plated nut adrift in the impeller section of the fuel pump caused progressive failure of the impeller and clogged the fuel filter with metal fragments. Approximately 75 percent of the "foreign object" (nut) was found within the fuel pump. (See photo.)

Maintenance and inspection error is considered the cause factor. The foreign object nut was of the same size and type as part number AN 365D 524C, which secures the impeller to its drive shaft.



Findings, Conclusions and Recommendations from Selected Engine Disassembly and Inspection Reports. (provided for use by operating and supporting activities concerned)

J33-A-18A—*Findings:* Engine was removed from a Missile and sent to overhaul for a disassembly inspection for a possible turbine failure. Disassembly for a hot section inspection revealed no mechanical or parts discrepancies. However, the turbine diffuser screen was approximately 10 percent contaminated with foreign materials, i.e., bits of rags, twine, paper, etc.

Conclusions: It was determined that this engine should have operated satisfactorily. However, additional accumulations of foreign materials on the diffuser screen would have caused high temperature and heat deterioration in the turbine section.

Recommendations: Insure that emergency igniter cartridges are removed from the cartridge chambers before sending engines to overhaul activities. (F9F H.M.I. 01-85-FGD-2 of June 1, 1959

J48—*Findings:* Engine was returned for a routine overhaul and was received at the overhaul activity with the emergency igniter cartridges in the igniter housings.

Recommendations: Assure compliance with Aviation Circular Letter 16-52 of 8 July 1952, "Clearing airfield runways, taxiways and aprons of ferrous articles, loose stones and debris." Para 5-330B Applies)

J65-W-16A—*Findings:* Engine was sent to overhaul for a disassembly inspection due to a suspected center main bearing failure. The center main bearing was found to have completely failed. The rear main bearing was intact but showed evidence of overheat. Inspection of the main engine oil pump revealed that the rear main bearing oil metering valve had been forced on the main pump body when the oil metering pump shaft was not properly aligned with the oil metering pinion. When the metering valve was forced on the pump body the pump drive bevel gear tab lock washer sheared at the tab, leaving the oil metering pump drive bevel gear inoperative. This condition caused both the center and rear main bearing micro pumps to be inoperative.

Conclusions: It was concluded that the bearing failure was caused by oil starvation due to improper installation of the rear main bearing oil metering pump.

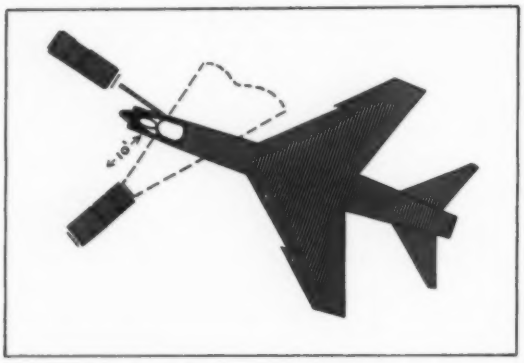
Recommendations: Install oil metering pump by hand and exercise extreme care to insure proper seating prior to tightening hold-down nuts.

J57-P-16—*Findings:* Engine was removed for high time and sent to overhaul. The circumferential flange on the inside diameter of the turbine case assembly part No. 306205 which locates the first stage turbine nozzle guide vanes was cracked at ten places between the flange serrations. Many small cracks radiated from the major cracks.

Conclusions: The cracks in the turbine case appeared to have been the result of heat.

Recommendations: It is recommended that the first stage turbine nozzle guide vane retaining flange in the turbine case assembly be examined for cracks at periodic inspections.

TOW TRACTOR TROUBLES



An F8U-1 was being towed to its parking spot on the line. In order that the tractor driver could see the parking marks on the deck and position the aircraft properly, another tractor was driven up so that its headlights played on the deck markers. (See diagram). As the aircraft reached its proper position the driver of the assisting tractor put his machine in NEUTRAL, applied the parking brake, and left his tractor in order to put the aircraft wheel chocks in place. The tractor, being on a slight grade, started to roll. Before the driver could get back on the tractor it hit and damaged the aircraft.

The tractor driver, in parking his vehicle pointed toward the aircraft, violated local instructions, specifically: "Vehicles servicing aircraft will be parked so that inadvertent movement of vehicle in either direction would not result in collision with the aircraft."

Comments and Recommendations of the Board— The primary cause of this accident was the improper operation of a vehicle by a qualified and licensed driver, insofar as the tractor was parked in such a position so as to endanger an aircraft.

Of secondary consideration is the poor design feature of the Clark ME-1A Tow Tractor emergency brake handle. (See photo.) This brake handle has an adjustment on the upper end designed to enable an operator to adjust the amount of throw of the handle, dependent on linkage wear, etc. This knurled knob is very easily turned, either intentionally or inadvertently. From two to four turns is all that is necessary to render the emergency brake useless, allowing the handle to be pulled fully aft with no resultant brake action whatsoever. This condition prevailed in this instance.

It is recommended that:

1. All vehicle drivers be reinstructed in the performance of their duties.

2. Supervisory personnel insure that all ground handling equipment is in good working order by means of periodic checks throughout each day.

The tractor driver is obviously in error for having violated current squadron instructions regarding operation of ground vehicles while servicing aircraft.

Simple hand brake adjusting feature led to trouble

However, in extenuation it should be noted that during the past six months approximately 11 different types or modifications of tractors have been issued to this squadron for use on the line. There

are significant differences in physical construction and methods of operation of these vehicles. Every effort has been made and will continue to be made to insure that all designated drivers are thoroughly familiar with the characteristics of each type of vehicle they are required to operate. However due to the continuous rotation of personnel in and out of the Line Maintenance Division in order to meet the needs of deploying detachments, sea-shore rotation etc. it is extremely difficult to keep all drivers cognizant at all times of individual equipment peculiarities. There is no formal training program available to accomplish this.

In this particular instance, investigation revealed that very few men on the line were familiar with the technique of adjusting the tractor emergency brake handle to insure proper operation, nor were they aware of the fact that normal vehicle vibration could cause the adjusting knob to back off to the point where no braking action could take place.

It is hoped that increased efforts in driver education will eliminate future instances of this type of accident. Furthermore a fix has been devised for this particular malfunction and will be incorporated locally.

ZERO OIL IN THE J-65—Recently we attempted to make the point that complete loss of oil pressure in a J-65 did not constitute a dire emergency as long as the engine was still running. In other words, with the proper corrective action, haste was not necessary. We have since received many queries on this subject, because it is not only a vital subject, it is also one that is controversial, misleading, nebulous, and non-committal. If you lose oil pressure you are in trouble, but how much trouble depends on how much you know, how old or new your engine is, whether or not a bearing has failed, and most of all—whether or not you have moved the throttle.

In order to clear the air, we offer the following information upon which to base squadron policy. It cannot be guaranteed that a J-65 will run for a definite period of time with zero oil pressure even though individual engines have run for as long as 45 minutes with zero oil pressure. We will guarantee one thing, however, and that is in the event of zero oil pressure a substantial reduction or addition of power beyond that required for level flight is sure engine failure, especially if the change is made rapidly.

There are two situations that spell unmistakable trouble if not handled correctly. Both conditions require a direct line of flight to the nearest usable airfield and a modified flameout approach to be on the safe side.

Condition 1: Fluctuating oil pressure or complete loss of oil pressure.

In this condition the pilot should maintain altitude if high enough for a flameout landing, or climb to an altitude which will permit a simulated flameout approach, without advancing throttle, and proceed as soon as possible to a point at which a landing can be made. The throttle should be retarded slowly to reduce thrust loads on the bearings, but not below a thrust level at which flight and landing can be accomplished. During landing maintain as much thrust as possible up to that required for wave-off slowing the aircraft by means of drag devices. So long as no vibration develops that engine is not likely to seize, but it should be flown as though it might seize at any moment. During letdown to a landing, maintain a position which will permit a flameout approach.

Condition 2: Abnormal vibration.

If abnormal engine vibration occurs, reduce power gradually to maintain safe flight and controllable landing and land as soon as possible. If vibration persists and /or becomes excessive, retard throttle further if conditions permit. Make throttle movements slowly, because if the vibration is the result of bearing failure, retarding throttle rapidly to low power setting may aggravate the engine's ability to accelerate when advancing throttle. This is due to increased friction.

To sum it up, if the power can be adjusted smoothly to a setting that will allow flight back to the nearest field, there is a better than even chance that the engine will continue to function until a landing is made. Above all, do not attempt to overfly a suitable field for the convenience of landing at the home field. Your engine may run for a minute or it may run until the fuel is exhausted. But everything over the first minute is borrowed time and we wouldn't advise borrowing any more than is necessary.—*ComNavAirPac Av Saf Bul.*

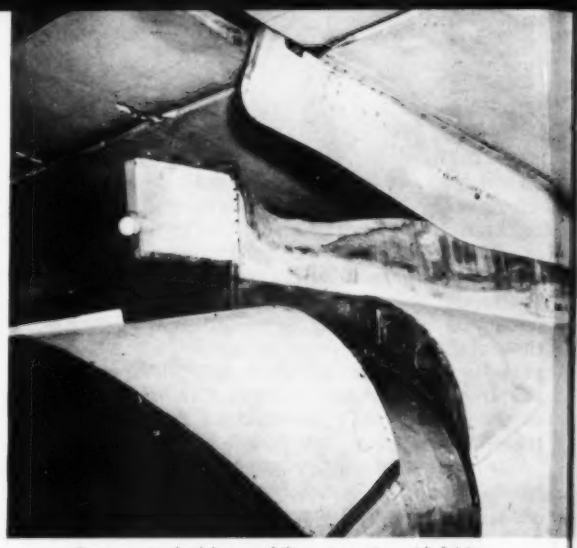
CONTRACT REFUELER INDOCTRINATION—While backing in to fuel a P2V-5F, the top right rear side of the tanker hit the left front edge of the nose assembly on the port jet pod.

The refueling truck did not have the required minimum of two men aboard and the driver was being directed by a mech from the wing of the aircraft.

The gas truck should not have been backed toward the aircraft. This is a fundamental safety precaution and should have been included in the indoctrination of the driver. The contract in this case with civilian refueling service states that fuel

truck crews shall be carefully indoctrinated in the safe procedures to be observed in fueling an airplane from a tank truck. The mech on top of the wing, who was directing the gas truck, misjudged the clearance between the gas truck and the jet pod.

Contract aircraft refuelers are required to have two qualified operators to be with each refueler whenever dispatched to service an aircraft. These provisions are contained in NavAer 06-5-502, Handbook on Aircraft Refueling, which is a part of the existing contract. Custodians of aircraft should insure compliance by the contractor.



Damage resulted from stabilizer operation with fairings partially removed

NOT IN THE BOOKS—An electrician was trouble-shooting an A4D-1 horizontal stabilizer trim malfunction. The after fairing assembly of the vertical stabilizer and the left-hand lower fairing assembly (part No. 5444926-49) of the horizontal stabilizer had been removed from the aircraft. The right-hand lower fairing assembly (part No. 544926-50) of the horizontal stabilizer had not been removed.

When external electrical power was applied the stabilizer was actuated to the full nose up position, then in the opposite direction toward the nose down position. When the stabilizer reached NEUTRAL or zero degree position the electrician felt a binding in the control stick and immediately stopped the movement of the horizontal stabilizer.

Damage to aircraft—Lower right-hand horizontal stabilizer fairing assembly bent and distorted. Lower right-hand vertical stabilizer fairing assembly between fuselage stations 414.0 and 456.6 was twisted and distorted (see photo above).

The damage is attributed to the fact that the horizontal stabilizer cannot be operated when the after center fairing assembly of the vertical stabilizer is removed and *only one side* of the lower fairing assembly of the horizontal stabilizer is removed.

Comments and recommendations of the Board: Nowhere in the Handbook of Maintenance Instructions (NavAer 01-40AVA-Z, Revised 1 June 59) are maintenance personnel cautioned to remove both right-hand and left-hand fairing assemblies before operation of the horizontal stabilizer with the center vertical stabilizer fairing removed. It is the opinion of the board that warning instructions should be included in the HMI to preclude the possibility of future incidents of this nature.

To preclude recurrence of incidents of this nature the reporting squadron has issued a maintenance department instruction that prohibits the operation of the horizontal trim motor whenever the after-center fairing of the vertical stabilizer is removed unless both of the lower horizontal stabilizer fairings are also removed.

FUNCTIONAL TESTING OF HYDRAULIC COMPONENTS—Numerous aircraft accidents have been caused by the malfunctioning of hydraulic system components or hydraulically operated equipment which has been installed and not functionally tested. The direct cause of these accidents, in some instances, can be attributed to the fact that maintenance personnel working with hydraulic system components or hydraulically operated equipment were negligent, e.g. hydraulic components were:

(1) replaced improperly, or

(2) disconnected for inspection and reconnected improperly, or

(3) installed improperly assembled. Such errors would have been discovered prior to flight if the proper functional checks had been performed.

BuAer Instruction NavAer 01.7 which recently cancelled and superseded T.O. 2-48 requires that when any hydraulic system component has been installed, replaced, disconnected, lines removed, or partially disassembled on any aircraft, the particular hydraulic system and its equipment which were affected thereby shall be given a complete and thorough functional test. This test shall include complete cycling of equipment such as landing gear, landing flaps, dive brakes, power control systems at least five times or until a thorough check has been made to determine that its operation and adjustment are satisfactory.

Where the operational test requires the hoisting or jacking of an aircraft to cycle the landing gear, care should be exercised to insure that jacks or

hoisting slings are properly positioned and adequately secured since the shock caused by extension and retraction of the landing gear without aerodynamic loads may cause a change in attitude or dislodge the aircraft.

Under certain conditions, such as hazardous weather, underway operations, or lack of proper testing material or equipment, it may be impracticable to jack up the aircraft to undergo a complete functional test. In such a case, a thorough visual inspection shall be made by the airframes officer and a suitable entry made in the aircraft log book regarding the type of test.

OPERATION OF GTC—An F8U was to be turned up on the line. An NC-5 was standing by supplying power. A GTC-85 was in position and operating. The plane captain checked the switches on the GTC-85 for proper positioning prior to attaching the remote control cable. The air hose was coiled on top of the GTC. As the plane captain reached for the fitting on the end of the air hose to attach it to the starting probe, which was inserted in the aircraft, but before he could grasp the fitting, the hose began to uncoil. The hose whipped several times before he could turn off the GTC-85.

A hole was found in the leading edge of the port unit horizontal tail and another hole in the fuselage above the UHT.

A thorough investigation of all electrical components was made on the aircraft and the GTC. The air shut-off switch on the GTC-85 was found to have a short circuit which permitted air to be applied to the air hose.

The investigation revealed a malfunctioning air shut off switch on the GTC-85 which caused air to be applied to the air hose. When air is applied to an unattached air hose the consequences can be dangerous to personnel, aircraft and equipment due to whipping. *(Similar experiences by other units resulted in utilization of a safety strap arrangement, see photo page 38).*

Attaching the air hose fitting to the starting probe prior to attaching the remote control cable will prevent similar accidents of this type. If the hose is connected to the starting probe any inadvertent applications of air will go through the hose and to the aircraft in the normal manner.

All activities operating GTC starting units take note of the foregoing contents.

JETTISONED JATO BOTTLES—After a normal JATO takeoff the pilot banked his P5M-2 to the left and ordered the port JATO bottle jettisoned. The crewman in the after-station indicated that the bottle had dropped and the pilot then banked the aircraft to the right and ordered the starboard JATO bottle to be jettisoned. The crewman informed the pilot that the starboard bottle had dropped but that the port bottle was still on the aircraft, whereupon the pilot turned to port and ordered the port bottle to be dropped. The port bottle dropped on this second attempt but struck the aircraft causing the damage shown in photo above, a 5½ inch vertical tear in the aircraft skin at station 681 on the port side of the aircraft. The torn area is 9 inches above the chine.

Possible Cause Factors Involved in this Mishap:

a. The pilot may have caused the plane to be in a slight skid to the port.

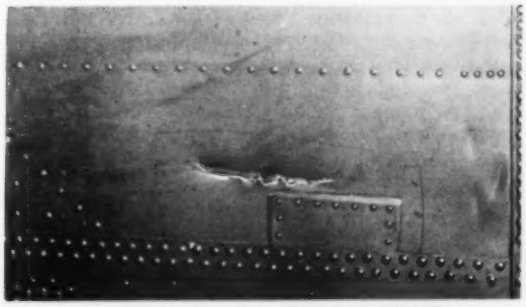
b. The crewman that actuated the JATO release handle may not have operated it in a sharp and positive manner. This could have caused one lug to release a fraction of a second prior to the other, causing the bottle to tumble from the aircraft.

Inspection of squadron aircraft revealed that 7 out of 9 inspected had scratches and/or dents in the same approximate location as the damage incurred by this aircraft. This indicates that the problem of JATO bottles striking the aircraft is a recurring incident and should be corrected in this model aircraft.

Comments and Recommendations of the Board:

a. Pilots should be required to place the aircraft in a slight bank to the side from which the bottles will be jettisoned. This should be done prior to ordering the JATO to be jettisoned.

b. The crewman actuating the JATO release handle should operate it in a sharp and positive manner in order to insure that both lugs release at the same instant.



JATO bottle drop caused damage to P5M hull

c. That a better JATO jettisoning system be developed for the P5M-2 aircraft.

Endorsers also recommended that the manufacturer investigate the design features of the jettison system on the port side and that consideration be given to the installation of spoiler boards similar to those used on PBM aircraft.

MURPHY'S LAW*

* If an aircraft part can be installed incorrectly, someone will install it that way!

Cross-connected Cannon Plugs

When an A4D pilot depressed the bomb release button he jettisoned the FAGU "Porcupine" rack from the Aero A7 rack. The rack caused limited aircraft damage.

Investigation determined the lead from the normal circuit was connected to the Aero 7A rack and the lead from the emergency circuit was connected to the "Porcupine" rack; the reverse of a normal connection. Aircraft Armament Bulletin 241 directs that one of the two cannon plugs on the Aero 20A bomb ejector track be painted red. This command paints the emergency circuit cannon plugs red on the Aero 20A racks and further paints the Aero 7A emergency jettison cannon plug red. Presently the plugs are interchangeable on both type racks and the only identification consists of the word "emergency" on the spaghetti over the wiring where it is not seen readily. In addition to painting the emergency cannon plug red, this command lock wires them to prevent their being removed by hand. This aircraft had just been received new from factory delivery. Aircraft Armament Bulletin 241 had not been complied with by the contractor and was not complied with on acceptance by this command.

The Aero 7A ejector rack was loaded with two Mk2 Mod 1 ejector cartridges in accordance with OP1515 of 4 March 1958. This OP is in conflict with the A4D HMI (AN-01-40-AVA2) for loads between 125 and 350 pounds.

Had the ejector rack been loaded in accordance with the latter publication, which calls for a larger ejector cartridge, the "Porcupine" rack might have cleared the aircraft without damage.

Recommendations:

(1) It is strongly recommended that the normal jettison and emergency jettison circuit cannon plugs be different sizes to prevent any possible mistake in connecting these leads.

(2) As an interim fix it is recommended that Aircraft Armament Bulletin 241 be clarified to state, "The *emergency* cannon plug shall be painted red." Further, it be revised to include the Aero 7A rack and that it include procedure for safety wiring the emergency cannon plug.

(3) That the contractor incorporate Aircraft Armament Bulletin 241 on new production aircraft.

(4) That the ejection characteristics of the FAGU Porcupine rack from the Aero 7A bomb rack be studied.

(5) That OP1515 of 4 March 1958 and the A4D HMI (AN-01-40-AVA2) be brought in consonance such that each directs the use of the same Mk/Mod ejector cartridge for loads between 125 and 350 pounds.

Which Way Is Up?

A new flap screw jack had been installed in a P2V-6. These screw jacks are installed with the flaps in FULL DOWN, and a flap actuation test is then performed. When the flaps were actuated by placing the flap handle UP, it was discovered that the inboard jack of the port outer flap section was raising the flap correctly, whereas the outboard jack of the port outer flap section was acting in the reverse direction (see photo.) Damage necessitated replacement parts costing $1762.00.

The design features of the P2V-6 flap gear box which can be installed upside down resulted in reverse action of the screw jack, a very definite example of "Murphy's Law."

Cause: The gear box cover had been put on upside down, and inasmuch as the gear box is installed with the lettering on the cover right side up, the gear box was installed in the inverted position. This caused reverse actuation by the port outer screw jack.

Corrective action: The addition of a narrow paint strip to the gear box will assist maintenance

Upside down installation of flap gear box caused reverse action of screw jack.

personnel to install the cover properly and is considered within the scope of operating units to accomplish.

Cross-connected Plumbing

On local test flight in takeoff position the F4D pilot stabilized power at 85 percent, checked instruments, released brakes while adding power to full military setting. Engine instruments read properly so afterburner was engaged and instruments again read properly. At this time the airspeed indicator was observed to be stuck on ZERO. The pilot disengaged afterburner, cut throttle to idle, commenced braking action, and opened speed brakes. Airspeed at start of abort was estimated at 100 knots. It became apparent that braking could not stop the aircraft in time, so the pilot dropped the tailhook, steered for the runway centerline and successfully engaged the arresting gear located just off the runway in the overrun area.

Engagement of both cables was made at approximately 20 knots airspeed. The engine was secured with no damage to the aircraft. The anchor chain section of the arresting gear was effectively displaced about four feet, while the cables allowed the aircraft to roll 270 feet off runway end. Aircraft tires blew approximately five minutes after aircraft came to a stop.

Cause of the airspeed indicator's malfunction—Maintenance personnel crossed the pitot tube connection with the static connection during installation.

The reporting unit reemphasized instructions to maintenance personnel that when any part of a system has been disturbed, such as changing lines, instruments, or removal of the instrument panel, the entire system will be ground checked utilizing the appropriate test equipment.

It appears that the lines to the airspeed indicator in the F4D are items of a Murphy's Law situation. It is recommended that action be initiated to determine the feasibility of making a marked distinction between these lines.

We must continue to press for improvements in aircraft design, training and especially supervision. Let's help the pilot by eliminating any condition that may cause him to make a mistake.—*USAF*

CLIPBOARD

On the Positive Side

HERE are a few items, suggested by a pilot group, that can prevent grief:

1. Make a habit of always caging your horizon after starting whether it appears to be normal or not. In some instances it will erect inverted and appear normal.

2. Be wary of any engine that has had an oil screen pulled, replaced backwards and then replaced properly after the engine has been started. In several cases of this, five have lost engine-driven fuel pumps and two have been wrap-ups within an hour after takeoff. Screens now are being modified so as to prevent such occurrences, but it will take time.

3. Make a habit of checking your omni on test stations. In the MDW area the station freq. is 111.0. Place the arrow on 180 degrees and the bar should be centered, plus or minus 3 degrees. All other stations are listed in FIM. Complaints have come from Midway approach control that some aircraft have been 4 to 8 miles off course when the cockpit instruments have shown on-course.—*Flight Safety Foundation*

Coffee

THE important drug in coffee is caffeine. The amount of caffeine in two cups of coffee appreciably affects the rates of blood flow and respiration. In small amounts, coffee may be considered as a nervous system stimulant. Excessive amounts may produce nervousness, inability to concentrate, headaches and dizziness.

—*OpNavInst 3740.7, 25 June 57*

What Would YOU Do?

THE time has arrived when all Safety Officers must set up a "What Would You Do?" program as a part of all safety meetings. This can be done two ways, first, describe a "situation" that a pilot might find himself in and ask someone to tell what he would do. All possible emergency conditions can be covered this way. The second way is to use the accident briefs from ComNavAirPac to set up the "situation," have someone tell what he would do and then tell him what was actually done. On the basis of the discussion that follows, squadron policy can be easily formulated. At the same time there will be a continual refresher in emergency procedures.—*ComNavAirPac "Pinpoint" Report*

Human Relations

THERE is a growing recognition that more attention must be paid to the human factors involved in aircraft operation. Increased performance has placed a premium on rapid and accurate judgment and crew coordination. Tensions among crewmembers, created by jurisdictional disputes, obviously have no place in a safe cockpit. The highest professional attitude should be adopted by those concerned so that safety be not jeopardized by conflicts which should be settled outside the airplane.

The jets will impose greater strains on all operating personnel because of their improved performance, high operating costs and need for much greater precision in operation. The transition from piston to jets will require changes in systems and habit patterns which are not in themselves hazardous, but must be regarded as potentially dangerous when they are departures from previous practice.

—*Flight Comment, RCAF*

Pilot-to-Forecaster

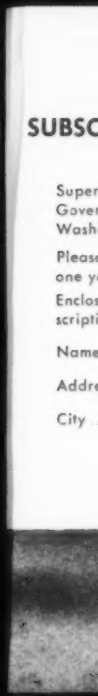
Attention All Pilots: Suggest that any unsatisfactory service or condition encountered by the pilot in the use of the Pilot-to-Forecaster Service be brought to the attention of the facility concerned in order that corrective action may be expedited. Suggest that other communication facilities at the same location be used by the pilot for this purpose when adequate contact cannot be made with the Pilot-to-Forecaster Service Facility.

The above is straight from Headquarters, Air Weather Service, and is a plea for help to all pilots who habitually use Pilot-to-Forecaster Service. Air Weather Service hopes this includes all pilots from the contemporaries of the Wright Brothers to the Class of 1-59.

If any pilot, on contacting Air Weather Service, (344.6 mcs) is not satisfied with the help he gets, tell them at once. If the pilot is not able to get through on 344.6 mcs., call the appropriate tower or approach control and find out "how come."

A life preserver is no good without the proper filling. The Air Weather Service, with the help of all pilots hopes to fill 344.6 mcs. with flight easing procedures and life-saving services. — *Quantico "SKY HOOK"*

No work is so important, or so urgent that we cannot take time to perform it safely!—Qantas Airlines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LCDR ALEXANDER W. URQUHART,
for your professional handling
of an emergency situation.

LCDR A. W. Urquhart, LT G. J. Waters, H. D. Daffron, AQ3

While attached to VAH-9 and operating from his parent carrier near Malta, LCDR Urquhart was launched in his A3D-2 on a local test flight. After the aircraft was catapulted the strut bottomed, and the nose wheel, scissors, and oleo fell from the aircraft into the water. Fuel aboard was 15,700 pounds at launch. The crew determined that Port Lyautey, 950 miles away, was the closest field with suitable arresting gear for this aircraft and LCDR Urquhart asked to be diverted to Port Lyautey.

With 13,500 pounds of fuel remaining and headwind of 75 knots enroute, he estimated 2000 pounds of fuel remaining at destination. Nursing his fuel, advising all stations enroute of his difficulty, obtaining permission to overfly Algeria, checking Port Lyautey weather, and making an idle descent from 120 miles out, LCDR Urquhart landed his A3D into the arresting gear at Port Lyautey with 1800 pounds of fuel remaining. Damage to the aircraft on landing, in addition to parts lost on the catapult, necessitated replacing only the nose wheel door, the taxi light, and outer barrel strut assembly.

Commander Carrier Air Group THREE commended LCDR Urquhart and his crew and said, "The professionalism demonstrated by this pilot and crew in properly handling a difficult situation and saving a two million dollar aircraft with no injuries to the crew is deserving of the highest recognition."

Commander Carrier Division SIX commended the trio in these words, "Your cool-headed management of the flight to Port Lyautey and the subsequent perfect landing into the arresting gear has contributed materially to the maintenance of the combat readiness of this carrier division."

S.O.P.

Standing Operating Procedures are the sum total of all the accepted methods and techniques used by an aviation unit to achieve the safe and effective accomplishment of its mission. SOP will vary from unit to unit to allow for differences in operating areas, types of aircraft, and mission and training requirements. These procedures are not found under one cover, although some units do make an effort to compile them in one way or another.

There is no shortcut to reviewing SOP. These can only be found the hard way — by extracting them piece by piece, subject by subject from notices, instructions, handbooks and manuals, from OpNav, BuWeps, Type Commanders and FAA. The completeness of such a survey reflects the level of professionalism attained by the searcher.